MECHANIX
ILLUSTRATED
September 1960

A Senator Says...

LET'S ABOLISH OUR $1,000-A-MINUTE FARM SURPLUS

By Senator Karl E. Mundt

SURPLUS WHEAT. Storage charges: $579,000 a day.

IN the past 26 years the American taxpayer has paid more than $40,000,000,000 for farm programs. This year alone the American taxpayer will pay more than $4,000,000,000 for farm supports; more than $1,500,000 a day—*more than $1,000 a minute!*—to store farm commodities in surplus.

The American taxpayer pays $6,000 a day to store peanuts; $131 a day to store honey; $238 a day to store tobacco. Flaxseed and rye cost $7,000 a day in storage fees; oats, $15,000 a day. Rice costs $17,000; soybeans, $23,000 a day; milk and butter fats, $29,000; barley, $65,000 a day; and cotton, $76,000. [*Continued on next page*]

When the taxpayer reaches into his pocket to pay storage costs on more vital items in surplus, he pays $262,000 a day to store grain sorghums; $444,000 a day to store corn; $579,000 a day to pay wheat storage costs.

And these reported warehousing costs do not include miscellaneous charges such as acquisition costs, financing, supervision, and the salaries of needed administrative employees in the Department of Agriculture.

This entire support program, growing yearly in size, can collapse of its own weight at any time. As more than one of my colleagues in the Senate has asked —When are we going to get the American taxpayer out of the farm business?

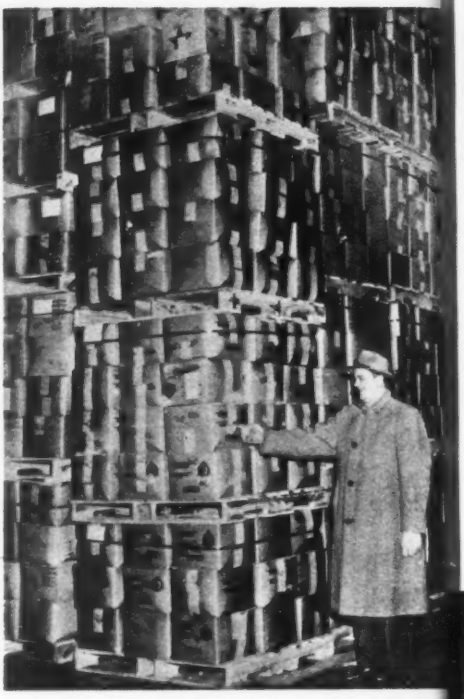
American taxpayers have paid for farm programs that called for plowing under corn, killing pigs, subsidizing exports. During one four-year period of the farm support program, the United States Government—meaning the American taxpayer—owned a total of 235,000,000 pounds of surplus cheese and more than 1,000,000,000 pounds of surplus tobacco!

Yet the United States Government can solve the expanding farm surplus problem and relieve the American taxpayer. It can do for the agricultural industry the same type of job the so-called Manhattan Project accomplished in the atomic field. With a stepped-up program of farm-product and farm-marketing research on a crash basis, we could channel our increasing farm output into an expanding market right here at home.

We are living in an industrial age. American people are using more products, more materials, more equipment of all kinds than ever before, and that use is increasing daily. Many of the products, equipment and materials can be supplied from raw materials grown on American farms.

For instance, we can, as many European countries do, use alcohol extracted from grain as a blend with gasoline for our automobiles and farm tractors.

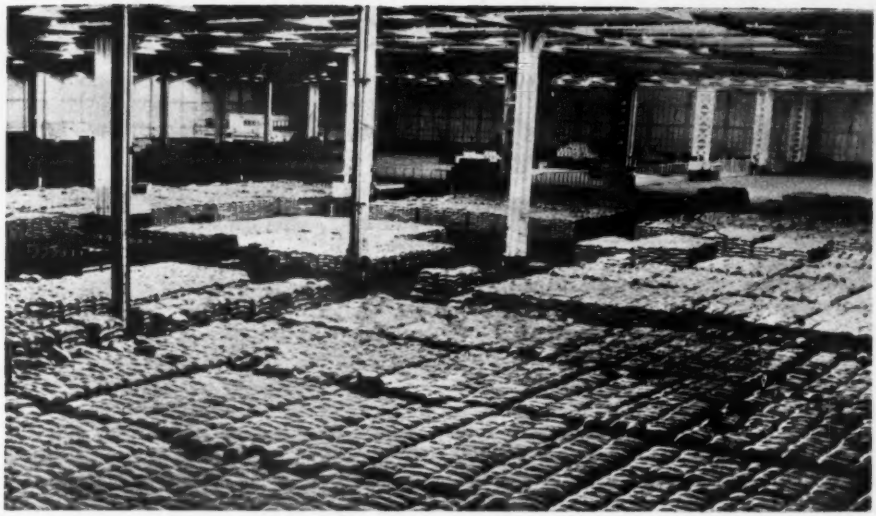
We are the greatest consumers of motor fuel in the world. If we blend only five per cent of grain alcohol with gasoline, we will conserve precious supplies of petroleum that are now being exhausted. The Indianapolis Speedway drivers use alcohol in their fuel because it gives more propulsion, more speed, more efficiency. Expanding this one use alone would get the American taxpayer out of the farm business.



SURPLUS BUTTER.
Storage charges: $29,000 a day.

We could, as we did during World War II, make our synthetic rubber supplies of grain alcohol. The Department of Commerce predicts a doubling of synthetic rubber requirements by 1975. If we were to reopen the eight government synthetic rubber plants closed after World War II, they would consume approximately 100,000,000 bushels of grain annually.

This would mean we could use corn and wheat now in storage (that must be reaching a stage unfit for human consumption) in a productive fashion rather than adding to the tax burden.



SURPLUS BEANS. Storage charges: $23,000 a day.

SURPLUS RICE.
Storage charges: $17,000 a day.

We can divide a bushel of wheat, use the starch for alcohol and develop new markets for the protein that is the residue. We can make a K-ration, rich in vitamins and minerals, and pack it in a wheat carton to supplement our school-lunch program and help the needy here at home who are on relief status.

The American petroleum industry now spends over $3,000,000,000 a year in research. The result is obvious in the flood of new products from petroleum. This compares with the figure of about 1/20th of one per cent of the gross sales of our agricultural output devoted to the search for new uses for agricultural products.

But we have found that everything made today from petrochemicals can also be made from grain; the molecules are interchangeable. Grain alcohol can be used to make not only motor fuel and synthetic rubber but new, more pliable plastics; solvents; surface coatings to repair the 700,000 miles of roads that need repairing. It can be used for explosives, insecticides, lubricants. It can serve our missiles, turbojets, and rockets.

We can [*Continued on page* 162]

MONORAIL cars are five inches long. There is no danger of shock from track conductor.

MONORAIL IN HO GAUGE

LOCOMOTIVE is seven inches long. Additional cars, tracks, supports can be added to kit.

STARMASTER Monorail Train kit contains a six-foot strip of metal-bonded plastic track which can be formed by hand into virtually any shape without breaking. It comes with eight sturdy plastic track supports which are set up 18 inches apart; a bullet-shaped locomotive; two trains; and two stations to be mounted on the track supports. The model is scaled to HO gauge.

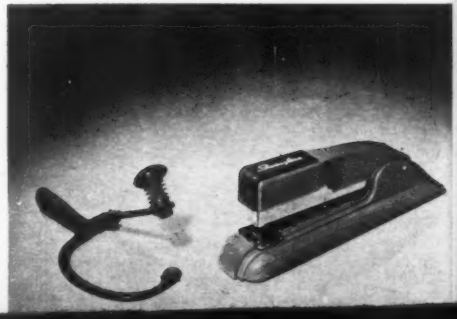
The train is operated by a 12-volt Power Pac; the aluminum-clad track is the conductor. The cars can take the sharpest turns without falling off. Additional six-foot lengths of track and supports are $1.80 per strip. Four supports are $1.29. The basic Starmaster Monorail Train retails for $24.95. •

HOW OLD IS THE STAPLER?

TODAY there are about 60,000,000 staplers in use and hundreds of billions of staples are sold annually. Staplers first came into use about three centuries ago but until the early 1900s were considered luxuries and purchased only by the wealthy. This "fastenating" information comes from Swingline—world's largest stapler maker—which has a Museum of Antique Staplers at its factory in Long Island City, New York. •

EARLY staples had to be broken from strip. Mallet was used to hit machine, effect seal.

LOUIS XV stapler had staples in form of a crown. Next to it is modern Swingline job.



BUILT-IN BABY SEAT for autos that would fold away into the front seat when not in use. Wesley E. Kleven, Hammond, Ind.

SPRAY-ON DEFROSTER compound in cans so the housekeeper can avoid long defrostings. Mrs. R. V. Hagerty, Pittsburgh, Pa.

HAIR DRYER ATTACHMENT for vacuum cleaners that would attach to the blower end of machine. Linda Lerum, Austin, Minn.

INVENTIONS WANTED!

Is there a gadget you think should be invented? If so, send its description on a postcard to Inventions Wanted Editor, MECHANIX ILLUSTRATED, 67 West 44th St., New York 36, N. Y. Each one printed will be awarded $5. Entries not selected cannot be acknowledged or returned.

BOWLING SHOES that slip on over your street shoes—cleaner, better-fitting than rental shoes. J. E. Debs, Palmdale, Calif.

PIGGIER PIGGY BANK that grows bigger as the earnest little saver stuffs it with coins. Dorothy Wheeler, Hammondsport, N. Y.

COMING...

HIT-AND-RUN M

DIAGRAM of missile-base train: 1. Hinged roof of box-car is swung upward by hydraulic rams; 2. Reinforced roof, locked in vertical position, serves as gin-pole for cables elevating rocket launching tube; 3. Elevating, steadying cables operate from winches at either end of central command car, act as guy lines when the launching tubes are vertical; 4. Lid drops open as launching tube is raised to firing position on base trunnions; 5. Cutaway view of tube in firing position. Note launching stand flame deflector at bottom; 6. Buffer cylinders steady tube, help transfer launching shocks; 7. Horizontal cradles cushion rocket-carrying tube; 8. Command car instrumentation determines firing position, plots arc to target area, fires Minuteman missile.

N MISSILE BASES

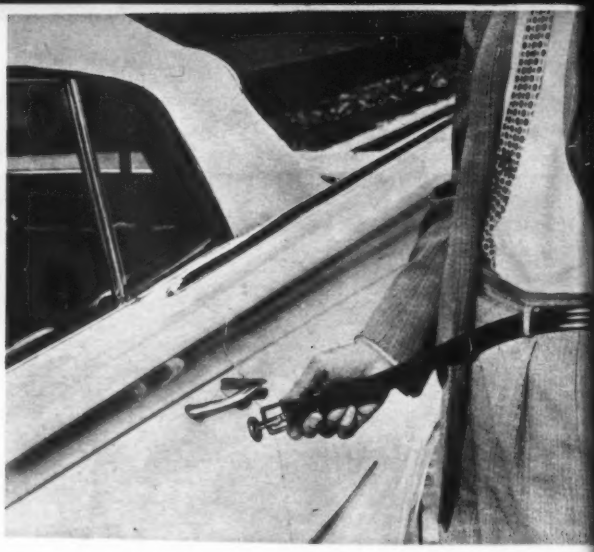
An Original MI Design by FRANK TINSLEY

IT looks like any other ordinary train as it rumbles over the countryside. But if you could see through the weathered boxcar walls you'd realize that this tired-looking ten-car train is a startling hit-and-run missile base containing the most up-to-date weapons system in existence. Its purpose: to provide a mobile launching pad for the Minuteman—Uncle Sam's latest and most powerful solid-fuel missile.

MI's version of the Minuteman train differs materially from those previously published. The original concept of an undisguised missile launcher, mounted on a flatcar, is now outmoded. It is now considered essential to house the bird's propellant charge and delicate mechanisms in a shock-absorbent, air-conditioned container. This lengthens its storage life and enables it to operate instantly, [*Continued on page* 165]

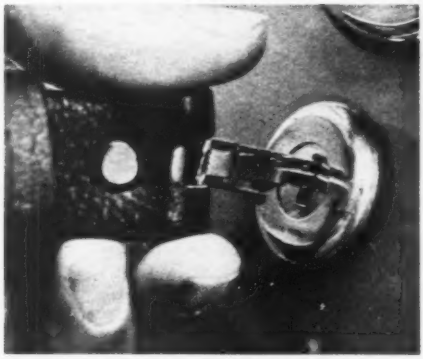
BRIGHT IDEA AWARD
MECHANIX ILLUSTRATED

CAR-KEY BELT



SIMPLE—you aren't likely to lose a car key of this type without losing your pants.

TONGUE of the belt buckle is the blank from which key can be cut by any locksmith.



CLOSEUP of the key in operation. Belt costs $3 (Tallow) and $5 (Moroccan grain).

WIN $50

MI will award $50 each month to the first person who tells us of a new and useful gadget that is patented and in production. Manufacturers are also eligible for this award. Pictures and a description should be sent to Bright Ideas Editor, Mechanix Illustrated, 67 West 44th Street, New York 36, N. Y.

HOW many times have you gone nervously through your pockets to make sure you have your car key—or haven't locked your car with the key inside? How many times have you had to break into your own car?

If you've been through either of these bad moments you'll see the point of this new Paris belt sold by department stores and men's specialty shops and made by A. Stein and Co. of Chicago. The tongue of the buckle is a key blank that can be cut to fit the locks of Ford, GM and Chrysler cars from 1955 through 1960. •

British HEAD-SPRINGERS

YOU'RE OUT! Firemen of Letchworth, England, show the new way to let a boy out of the commonest boy trap of all. A more familiar way is to cut the kiddie out with an acetylene torch.

SPREADERS are part of the hydraulic pump gear that is standard equipment in British fire department. Firemen all over Britain have been notified of this handy way to spread railings.

PHILOSOPHERS may ponder how it is that boys can get their heads through iron railings but can't withdraw them. Firemen, on the other hand, must get the boys out. Cutting the railings is one way. Another, discovered by a thoughtful fireman of Letchworth, England, uses hydraulic pump equipment to spread the unyielding yoke of iron. •

ORTHODOX USE for the hydraulic pump is freeing victims of auto accidents as demonstrated below.

"Someone else's good fortune can often sour you on the job you're holding."

Should You Change Your Job?

By Lester David

DO you hate your job? Resent every minute you spend at the "salt mine?"

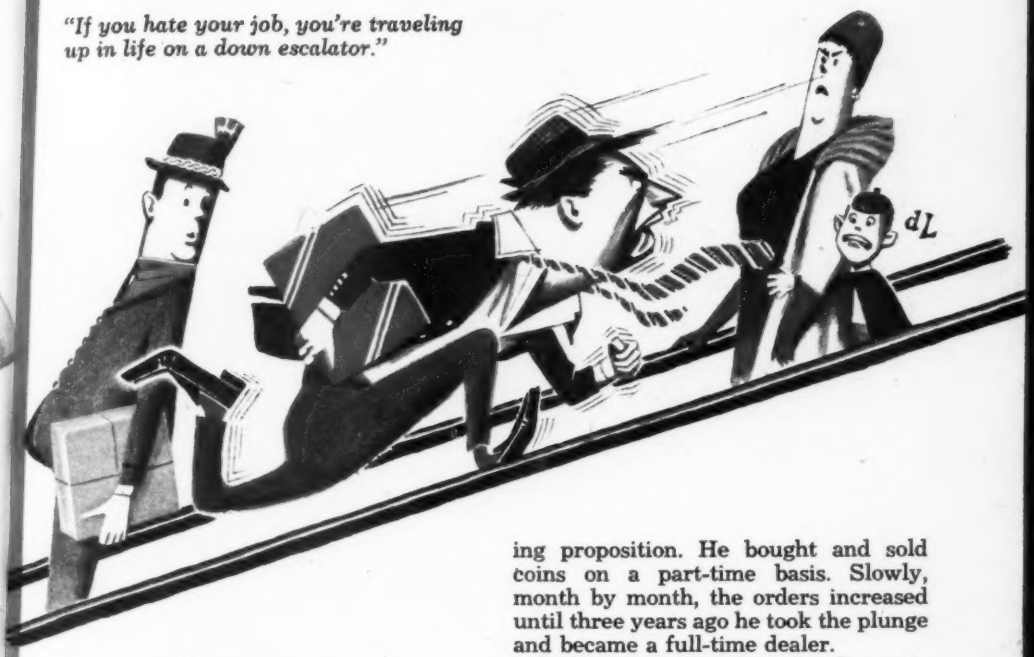
You're not alone. A nationwide study by the American Institute of Public Opinion (the Gallup Poll) reveals that nearly 50 per cent of all working Americans are unhappy in their work. Anne Heywood, one of the country's foremost career-changing specialists, puts the figure closer to 60 per cent.

This means three out of every five workers are misfits, wasting their lives in jobs they hate. For the individual, job unhappiness can result in poor emotional and physical health. Your zest for living can be dimmed, your development as a human being stunted. And, inevitably, your career will suffer. As Anne Heywood puts it, "If you hate your job, you're traveling up in life on a down escalator."

But if you are one of the misfits you needn't stay chained to a job you hate. Thousands are making switches weekly, moving from dead-ends to horizons unlimited. Take the case of Richard Picker of New York, who managed a chain of candy concessions in movie theaters. For 18 years Picker hated the monotonous drudgery of his job and was happy only when he could retreat at day's end into his lifelong hobby, coin collecting.

One day the idea struck. Why couldn't he earn his living in the field he loved? In 1954 he took his first careful step to transform a hobby into a pay-

"If you hate your job, you're traveling up in life on a down escalator."



ing proposition. He bought and sold coins on a part-time basis. Slowly, month by month, the orders increased until three years ago he took the plunge and became a full-time dealer.

Today, operating from his home in Bayside, Queens, Picker runs a flourishing coin business. Already he earns more money than he did before—but he thinks it's more important that he loves his work.

But career-changing is not as simple as shucking last year's overcoat. It has to be approached scientifically. Anne Heywood, who has helped many thousands of miserable, even suicidally-desperate jobholders, has evolved a step-by-step technique on how to switch.

Before anything is done, you must be sure you're really ready for a move. You may not be as unhappy as you think. Hearing or reading about someone else's good fortune can often sour you on the job you're holding. But there are a number of sound indications that you're really ready for a job switch. It's time to make a change:

1. If you got into your present line for the wrong reason—family pressure, prestige, glamor or nearness to home.

2. If you must admit to yourself that you don't have a deep interest in the work. It's a [*Continued on page* 163]

"Perhaps you should follow that sneaking interest in dress designing."

MONEY MAKING IDEA

COBBLER FOR CANINES

BOOTED POINTER pup poses with Fred Lewis, famous pointer booter. No Huck Finns, gun dogs love them.

TONGUED BOOTS are easily slipped over paws, then taped to dog's legs. Dogs wearing them stay fresh longer.

IN the dog boot business it isn't a pair—it's a set. For $8.95 you buy a set of top-grade rubber boots that will protect your hound or gun dog from thorns, rocks, heat, cold and nearly anything that cuts a pad.

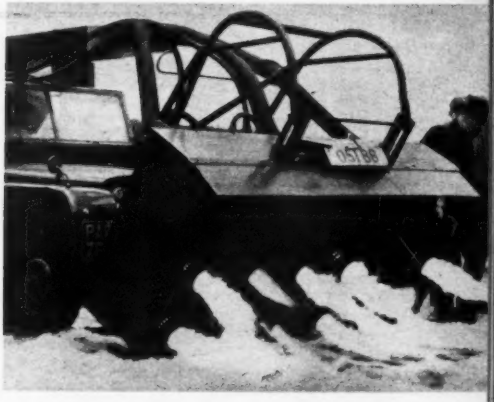
The man who makes the boots is Fred Lewis of Enid, Okla., who introduced booted gun dogs to local field trials several years ago and mowed down any doubts about the innovation by walking off with the championship. Lewis began by wrapping his dog's feet with a variety of materials—canvas, leather, rubber, etc. Then he had a wooden paw whittled and an aluminum mold made from that. He cured a variety of materials on the mold in the oven of an electric roaster, found that top grade unused rubber made the best dog boots. At first he made boots only for his own dogs, then for those of friends; now he, his son and son-in-law make and sell 1,000 sets a year, mostly by mail order. (Write to the Lewis Boot Shop, 308 N. Washington, Enid, Okla.) All three are fully employed in other fields but Lewis, a brake and alignment specialist, is thinking of going full time with his patented dog boots.

—Calvin Bergdall

IT'S NEW

VTOL FIRST: the Short SC-1, made in No. Ireland, is the first to go from vertical to forward flight, back again to vertical. It has four Rolls jets for vertical thrust, one for forward.

SPARE BUMPER devised by French inventor is spare wheel mounted forward on vertical axle to turn car away from anything bumped.



SNOW LOCUST, a British ice-and-snow remover, mounts 12 jet oil burners to melt five miles of snow per hour at 1,200°F.

CONTINUED . . .

SHARK SHOCKER shoots electrical impulses at maneaters or underwater wise guys. Skin diver wears battery on back. Note pistol-grip and trigger.

TYPE RIGHTER works on principle of two wrongs making a right. Errors are corrected by covering with ink-absorber paper, retyping error to erase it. German device.

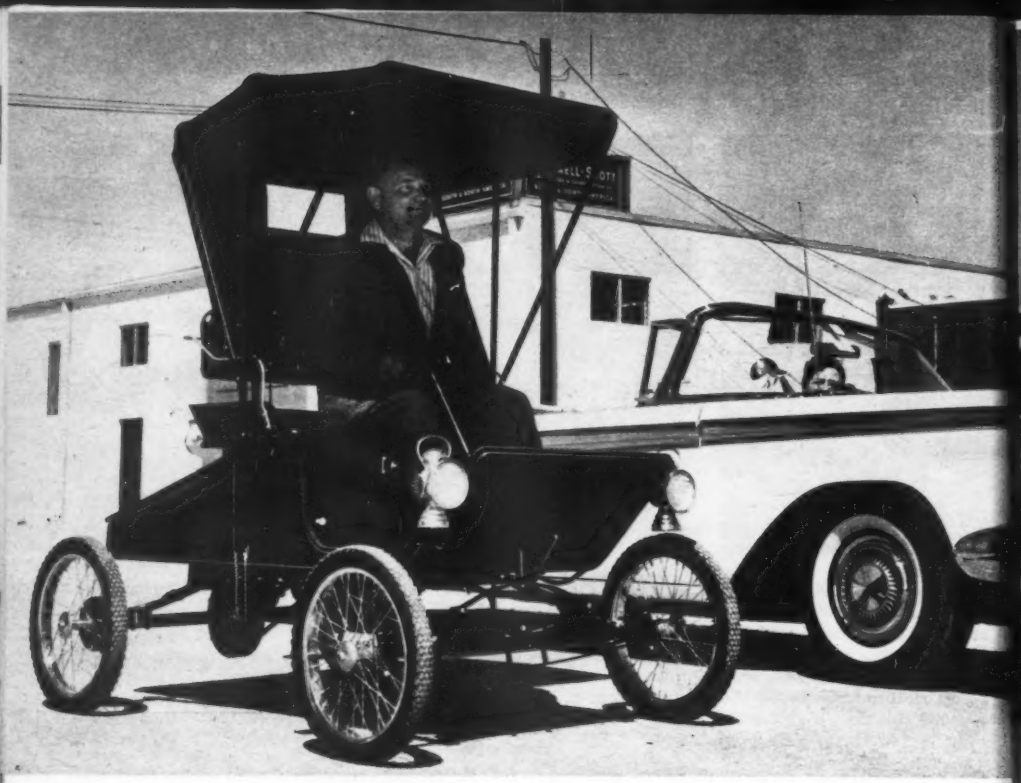
GELDWECHSELAUTOMAT (changemaker) in German bank supplies change to storekeepers after banking hours. Bank customers have key to machine. Coins come in rolls.

CHANGEMAKER (Geldwechselautomat) in housewife's handbag holds $17 in coins that pop out as she prods those buttons, saving all that fumbling in the mess inside. It's British.

CHICKEN-ON-A-CAR, car won't go, that's what they call Poularde a l'auto—a specialty of an eatery at Neckarsulm, Germany, that caters to motorists. The French name means Chicken-On-A-Car, roughly. Bit silly—nicht wahr?

COFFEE ON A BELT—for a belt of coffee, customers of a Hamburg cafeteria line up at this instant java dispenser. Powdered coffee on belt plus steam in pipe yields a piping cup.

SNIPE TALLY on snippy cigarette holder is a reminder of how many she has smoked during the day. It adds one as butt is ejected. British.

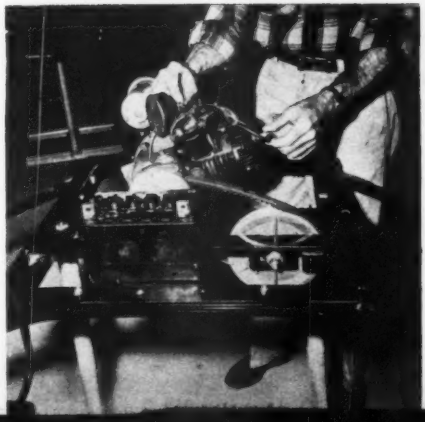


CAPTAIN Al Starts is shown at tiller of 1901 ¾-size replica Ford. Jaunty rig has body of marine plywood with mahogany overlay, seven coats of hand-rubbed black enamel finish and gold pin striping. Hand-spun aluminum lamps sport Seal-beams.

RETURN OF THE 1901 FORD

THE snazzy roadster shown on the cover of this issue, with Arthur Godfrey at the tiller, is a ¾-size replica of a 1901 Oldsmobile. On these pages is a modern replica of the 1901 Ford. Both of these "Cars With The Backward Look" are made by the Rollsmobile Corp. of Ft. Lauderdale, Fla.—owned by Capt. Al Starts, Godfrey and Leo DeOrsey.

The Ford seats two adults and handles easily in traffic. An air-cooled Continental AU85 engine gives it a 30-mph speed and 100 mpg. The 300-lb. car is 72 inches long and rolls on 20-inch chrome-plated wheels. *(P.S. See the Home-Shop-Crafts Section of this issue if you want to build your own 1901 beauty)* •



HAND-BUILT Fords have Naugahyde-covered seats padded with foam rubber. A rubber bulb bugle horn supplies the honk. Square trunk has hinged lid. Engine boasts silent electric starter. Old-fashioned carriage design chassis has frame of welded iron.

REMINGTON'S International match free rifle is being made for Olympic shooters in 7.62 NATO, 30-36 and .22 long rifle versions. It has shoulder hook, track-adjustable palm rest and sling swivel, one-eighth minute click sights.

WILL THESE GUNS BEAT THE RUSSIANS?

HAMMERLI .22-caliber (long) pistol is made in Switzerland and is a favorite piece for many shooters both here and abroad. It is said to be extremely comfortable gun to heft and sports a hair-trigger.

UNCLE SAM'S bangaway specialists are busy sharpening their sights for the scheduled Olympic free rifle and pistol matches September 5-10 in Rome this year. The team to beat, of course, is the Russians. American shooters will go to the firing line with their best weapons to date supplied by such companies as Winchester, Remington Arms, High Standard, Ruger, and Smith & Wesson. Winchester's revamped Model 70 rifle and High Standard's brand-new single shot battery-powered free pistol will see plenty of action as will Remington's International match free rifle. Ruger's Mark I and Smith & Wesson's fixed-sight match gun also point to the U. S. team's best score in years. •

Ruger's Mark I and Smith & Wesson's fixed-sight match gun also point to the U. S. team's best score in years. •

TEENAGE businessman and some admirers. He sells Putt-Nik, Simplex, Hellcat and Wildcat karts with West Bend, Clinton, or McCulloch power plants.

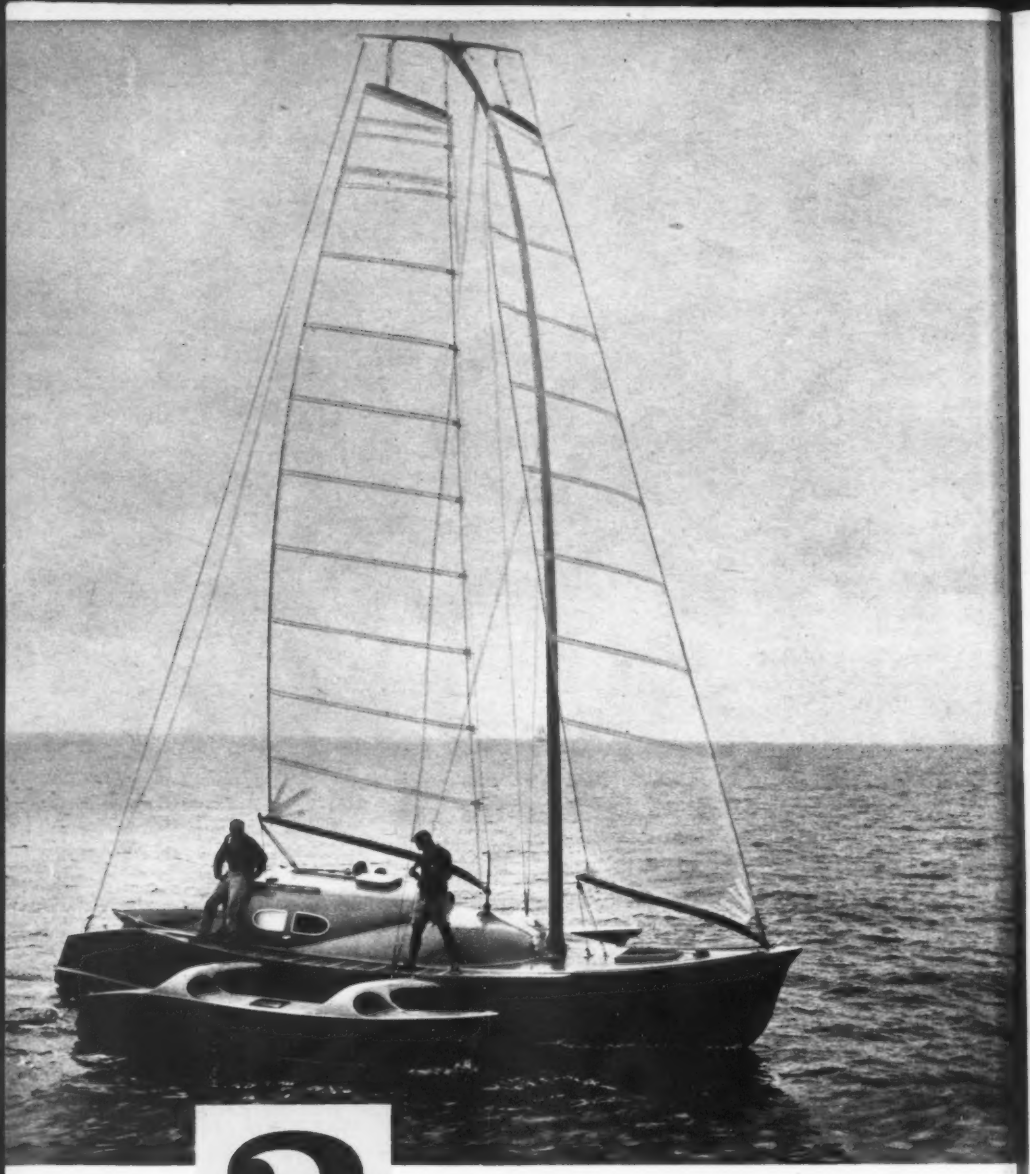
America's Youngest KART DEALER

DAVID explains merits of kart to potential customers, above. He works at plywood desk top supported by kart tires, below.

DAYTONA Kart Center is the name inscribed on the windows of the ex-bakery in Daytona Beach, Fla. The big wheel of the DKC is 13-year-old David Evans who conducts unique business hours. The place opens at 3:30 when the young tycoon bounces in from a tough day in his eighth grade class.

David is the son of Dave Evans, Cruise Director for Goodyear Tire and Rubber Company's racing activities. The youngster opened his shop with a "test track" lot next door with $1,100 he earned in other part-time ventures. Customers who come in seeking information are surprised when they meet the boss. But David knows his business and claims he can spot the difference between a looker and a buyer. He also says he's never failed to make a sale after getting the man with the checkbook behind the wheel.

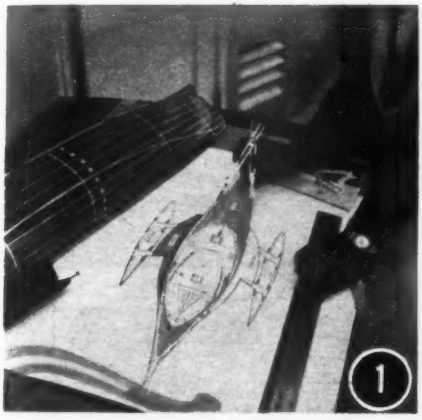
—Jim McMichael

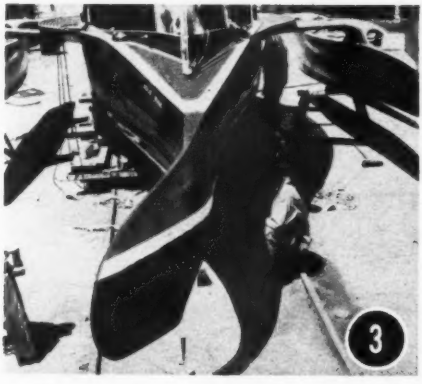


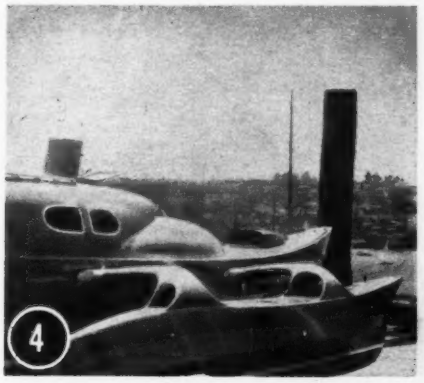
3 HULLED DREAMBOAT

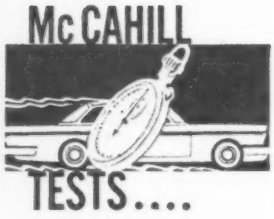
KOLU NAIA means Three Porpoise in Hawaiian—a fit name for this three-hulled craft, designed by two Convair engineering men in San Diego. The 40-ft. plywood and glass fiber craft weighs 3,000 lbs., draws only ten inches. Sails are of transparent Mylar. Designer-owners Dean Kennedy and Jack Fulton claim she planes at 10 knots. Assessed at $30,000, she cost $5,000 for materials, two years of sparetime work. •

DESIGNING towards the goal of a sailboat that will go at speeds near those of prevailing winds, that one man can handle and that will negotiate surf, rivers and shallows, Kennedy and Fulton brought high technology to bear on the problem. 1. Kolu Naia on the drawing board. 2. A working model pretty as the finished craft. 3. Flexible rudder is designed to reduce the prohibitive drag of a flat surface at high speeds. 4. Molded plywood hulls, cabins and outrigger spars show the aircraft influence. 5. Spacious, comfortable craft has planing hull. 6. Tall mast points straight up at mooring—and very nearly so when Kolu Naia skims along in her comfortable, upright sailing attitude. Note the tri-hull's high-and-dry deck.









A British Caravan

This specialty rig sleeps four, feeds a crowd and offers a comfortable ride.

By Tom McCahill

HILLMAN-COMMER has a transparent extension on roof that increases headroom.

IF your idea of heaven is to beat over the highways in an adventurous mobile flophouse, then by all means investigate the British Commer Caravan. Here is a rig built with the sportsman in mind. For making it up the Alcan Highway to Alaska or probing through the jungles of Guatemala, this may be just the four-wheeler you need. There are undoubtedly hundreds of different uses the Commer can successfully be put to by people with varied ideas of fun. Let's take Paul Whiteman, for example. He bought a Commer with two uses in mind —first, as a rest spot when he goes on hunting trips; second, as a mobile base when he attends big-time sports car races. When I heard Paul owned one of

these beetles, I immediately sounded my A for a test—and here it is.

In the first place, if you're all real chummy, the seven-person seating arrangement makes up into one double bed plus one single bed and a hammock, for a total of four sleeping spaces. The Commer has a two-burner butane stove and butane (as well as electric) interior light. Next to the stove is a small cruiser-size sink with running water. The water is supplied from two cylinder reservoirs holding a total of four gallons—and if you don't like water, more popular fluids can be substituted. In fact, you could keep your tiger milk in one container and a ready-mixed load of bicarbonate in the other. Also in typical small cruiser style, the double bed, when not being used for sleeping, converts into an attractive dinette for four. This job is loaded with more storage cabinets and knick-knacks than the Cuban government and it seems that no matter where your eyes come to rest, you're looking at another shelf, closet or cosy corner.

The Commer has an opera-hat type roof that pushes up a good two feet. When underway, this extension nestles into the regular roof line and pops up like a Jack-in-the-Box, with slight hand pressure from the inside, when desired. The entire unit is made out of a transparent material, giving a skylight effect. At the top is a clever vent to remove smoke and other objectionable fumes from the cabin. However, the best feature of this pop-up roof is that it allows more than six feet of head room for walking around when you've settled into a camping area. Without this, the overall height of the entire vehicle would have to be much greater. For example, the overall height of the Commer is 79″ as against the VW camper's 84″.

Now, by this time I've either lost you entirely or you are genuinely interested. If you are still with me and have ever thought of this type of balloon either for general use or as a straight fun car, you've undoubtedly thought about the VW Kombi and its many combinations. There is also another Limehouse job of similar proportions called the Thames (associated with Ford) and the Renault

PAUL WHITEMAN scampers up side ladder to use roof as grandstand or shooting perch.

CARAVAN with opera hat retracted; spare tire is in the roof rack atop "Pop's Pub."

REAR DOORS open wide; there are also two doors on right side and one on the left.

VISIBILITY is excellent; driver can see everything including tops of other cars.

DOUBLE BED, when not used for sleeping, converts to comfortable dinette for four.

CHEF PAUL whips up an omelet on the two-burner butane stove. There's a sink, too.

TEST CAR SPECS

MODEL TESTED: **Hillman-Commer Caravan**

ENGINE: **4** cyls; **91.2** cubic ins; **52** brake hp; **76** ft-lbs max torque; **7** to **1** compression ratio. Bore **3.11** ins; stroke **3.00** ins. Fuel required: Regular. Standard axle ratio: **5.125.** Wheelbase **90** ins; length **167.7** ins; height **79.5** ins; width **73** ins; front tread **47.88** ins; rear tread **55.50** ins. Weight **2,550** lbs. Gas tank capacity **10.5** gals. Turning circle diameter **36** ft. Tire size **6.50/6.70X15.**

PRICE (without optionals): **$3,655.**

PERFORMANCE: Top speed **65** mph. All times recorded on corrected speedometer.

Petit Panel. Lets run off a few comparative figures on these four different rigs. The overall length of the Commer is 167″, compared to the VW's 168″, the Thames' 160″ and the Renault's 161″. The Commer is the widest, at 73″, compared to 69″ for the Volkswagen; both the Thames and Renault are 70″. The wheelbase is 90″ on the Commer, 94″ on the VW and 84″ and 89″ on the Thames and Renault. The ground clearance on the Commer is 7¼″ versus VW's 9½″, the Thames' 8″ and we haven't measured the Frenchman.

Now we come to the real meat. The interior length is 107″ against VW's 106″ and 95″ and 97″ for the other two. The roomy interior width is 71″ against the VW's 59″ and the other two's 57″ and 61″. The interior height is 54″ with the opera hat closed. The VW has 53″, the Thames 51″ and the Frog 60″. In other words, the Commer is the biggest of the four. The engine displaces 91.2 cubic inches against VW's 73. The Thames blows 103 cubic inches and the Renault 51.

Now if you roll all these figures into a ball, the Commer comes off having by far the largest interior, while the Thames has the biggest and hottest engine. Where this bus (or, as the British say, "van") starts to stand out is in its riding qualities. As anyone who has ever experienced it knows, driving some of these campers [*Continued on page* 158]

mimi

MIMI, who is always injecting joy into our dull, workaday lives, shows how to inject nutrients into your lawn or garden soil. Step the Rooter-Shooter into the ground, withdraw it, expel the core of soil by pushing the plunger knob. The tool can be used for a number of jobs—fertilizing, weeding, soil sampling, transplanting, aerating. Made by Pedco, P. O. Box 844, Dallas, Texas. $10.

HOW TO DRIVE--

With more and more cars on the road, driving has become

FATIGUED driver on turnpike is straddling center line, a menace to both traffic lanes.

SECOND passing car is following leader too closely, may pile-up at sudden stop.

By

Tom

McCahill

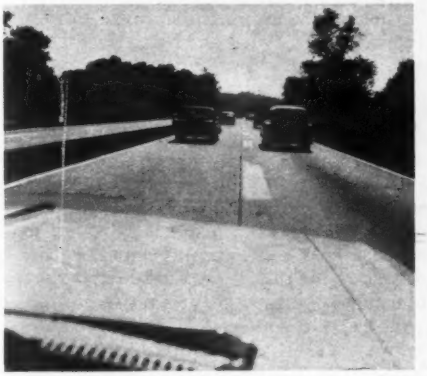
IN more than two million miles of driving I've been pretty lucky. According to the Law of Averages I should have been in a mahogany box a long time ago. Just staying alive is becoming a bigger problem every day for millions of American automobile drivers. Some of the best are getting killed and the mediocre are being wiped out by the barge-full.

The purpose of this article is to keep some of our readers from ending up at the Pearly Gates ahead of time with egg on their faces. I realize many of our readers are among the best drivers in the world, as only those who are really interested in driving and things mechanical buy magazines such as this. Regardless, you can get killed like anyone else.

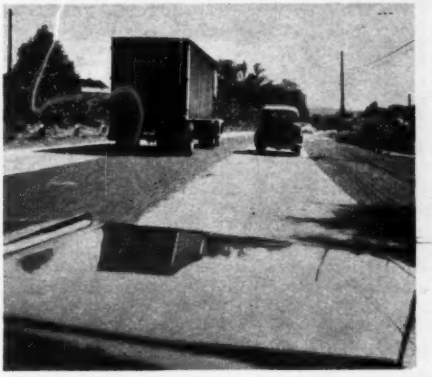
In mentally reviewing some of the close calls I've had, I can think of five different occasions where luck and luck alone saved my life, where all the skill in the world wouldn't have helped me gasp out an extra breath. On one occasion in Florida I started to cross a 200-foot bridge at the legal speed of 65 mph when a car coming from the opposite direction, traveling at least as fast, started heading right for me. The bridge was only two lanes wide and had a five-foot wall on each side. The man in the other car, head turned, was talking to somebody in the back seat. There was no time to stop. I held my horn down solid and at the last possible instant the driver of the other car looked around, saw he was mostly in my lane and cut his steering wheel viciously to the right. He crashed the bridge wall and I shot through the opening he had left. Luckily neither he nor his passengers were seri-

AND LIVE!

a problem of survival. These tips might save your life.



EVEN ON uncrowded turnpikes keep an eye open for escape routes in an emergency.



TRAILER may suddenly whip back into your lane. Make sure you're not tail-gating.

ously injured but his car was completely demolished. If I had been killed in this situation it wouldn't have been through lack of skill. All the driving talent in existence couldn't have saved me.

On another occasion I was driving up a mountain trail too narrow for two cars to pass. To my right was a 200-foot drop, guarded by a cable rail. On the other side of the road was a high cliff. I spotted a huge truck coming down the mountain out of control and heading for me at close to 70 mph. Again, there was no place to go, so I jammed the car as hard as I could against the cable fence and held my breath. Fortunately, the guard cable held and the truck whizzed by me with just a nick of fenders. Under these conditions, having been good to your mother or kind to your dog may possibly help out.

But those are the situations so bleak that you might just as well look out the window and enjoy the scenery as long as you can. There are also close shaves where skill and skill alone can save your hide. The man without skill, but lucky, just ends up as a hospital case. Manufacturers expect a 50 per cent increase in the number of cars on the road in the next 15 years. In other words, 105,000,000 cars by 1975! This means every time you pull out of the garage there will be hundreds of thousands of screwballs waiting to nail you. Driving skill is your best chance for survival.

As I wrote on these pages many years ago (and I haven't changed my thinking one iota), the very safest way to drive at all times is with the firm conviction that the driver of every other car on the highway is an out-and-out lunatic —or at least an apprentice. Tie this in with a little common sense and your chances of survival may be upped considerably. For example, though I'm no Prohibitionist, I believe drunken drivers (and drivers just slightly high) cause *at least* 50 per cent of all our fatal accidents. The percentage is a lot higher than anyone knows, for the following simple reason: Take good old Jed Lush, village banker and prominent member of the country club set. On the particu-

WATCH for cars suddenly zooming out of driveways—especially from tavern stops.

lar Saturday night when his number is up, Jed and his wife celebrate extra-high at the club and head for home around 12:30. His wife offers to drive and his best friend also volunteers but good old Jed waves them off with "Don't be shilly, I'm sobersa preecher."

When the local police scrape Jed and his wife off the tree, they realize the old boy was as drunk as a goat. But what the hell, old Jed's been good to all of them and it won't help things to say he was drunk—might even affect the insurance for the kids. So the newspapers read "Prominent local banker and wife killed when he loses control on curve" or "skids on wet leaves" or sometimes "blinded by oncoming headlights." No mention at all that he was crocked.

Police are reluctant to state that a man who was killed was drunk, especially if he was a prominent citizen. Even State Police will softpedal this fact when there's nothing to be gained or lost by revealing the truth. Actually, there is a lot to be lost—in statistics that fail to show the percentage of drunken highway deaths. One police official told me that in all fatal accidents involving drunks, he doubted that more than 50 per cent of the reports gave "drinking" as the cause.

For example, let's say you're going to do considerable driving for social or other reasons on a Saturday night in the suburbs. (If the night happens to be a holiday weekend such as the Fourth of July, Decoration Day or New Year's Eve, your precautions should be even greater.) If you have the brains of a depraved squirrel you're bound to realize that the driving hazards at midnight on Saturday are many times more numerous than they were at 11 a.m. last Tuesday. Here's how I play it:

On holiday and weekend nights when I have to drive, I assume every other car on the road is being driven by a fully-charged lush. I cut my speed under what I normally travel and stay particularly alert at full-stop corners which stews might ignore. I'm especially cautious when I pass the local taverns. I've had drunks whiz out of parking lots at these places as unexpectedly as a cat jumping a mouse. On some occasions I've seen a jalopy-full of beered-up young punks looking for a race. I avoid such contests like the plague. When the drunks are out, you should double your watchfulness and keep your car in a good dodging position as much as possible. This is as true on tavern-free turnpikes and throughways as on backwoods dirt roads. Plenty of drivers arrive on the pikes with quite a snootful.

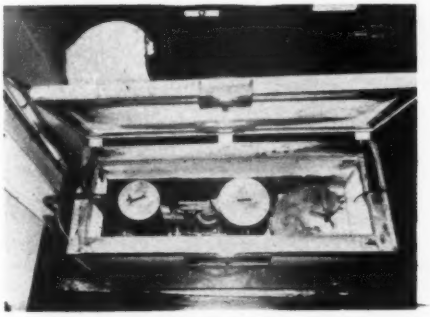
Also on the pikes you're apt to encounter that other menace—the driver who is just about to fall asleep. I've had some of my closest calls on our major turnpikes. I once had a car with a dozing driver come right across the median strip at me. I missed him by ducking inside. A typical driver on a two-week vacation trying to make Miami or some other spot creates quite a problem. In the first place the vacation driver rarely drives more than eight to ten thousand miles a year. Even if he's a good driver he'll tire out a lot quicker than the man who is on the road making long hauls all the time.

This vacation driver may have gotten a six a.m. start. In the late afternoon he may do many things he wouldn't have dreamed of doing a few hours before. When fatigue takes over, this driver may suddenly pull out of line, cutting-off another car that was passing. He often misses stop streets and his reactions, even to [*Continued on page* 160]

QUICK-FREEZE TAXIDERMY

FREEZE-DRYING allows lifelike poses, prolongs specimen life, simplifies mounting.

FIRST step in process is to freeze animal by pouring liquid nitrogen over the body.



SPECIMEN is placed in a conventional deep freezer and then into a vacuum chamber.

FREEZE-DRYING animals is a new technique which may revolutionize the art of taxidermy. It allows animals to be preserved perfectly in any position and is said to be simpler than conventional mounting or wax impregnation. A specimen can be restored to the condition it was in when it died simply by dunking it in water for an hour or so.

The process was developed by Dr. Harold T. Meryman, a biophysicist at the Naval Medical Research Institute in Bethesda, Md. It consists of freeze-fixing the animal with liquid nitrogen as soon as it dies, storing it in a household freezer until it is in a solid state and then putting it into a vacuum chamber to remove all the moisture in the body. Once dried, the specimen will remain for years without decaying.

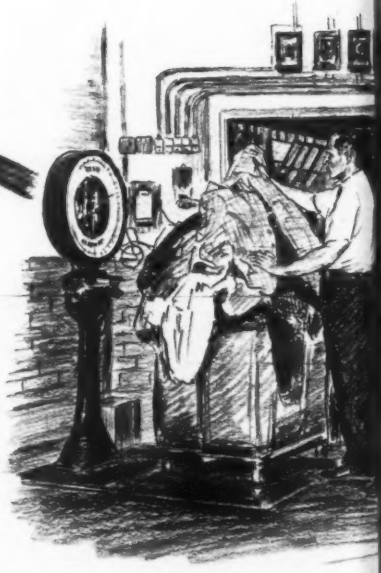
The process has been used successfully to preserve birds, squirrels, rabbits, snakes, toads and several kinds of insects. It also works with larger specimens but the drying process takes several months. • *—Phil Hirsch*

RESULT is a beautiful, lifelike specimen. Dr. Harold Meryman (left) devised process.

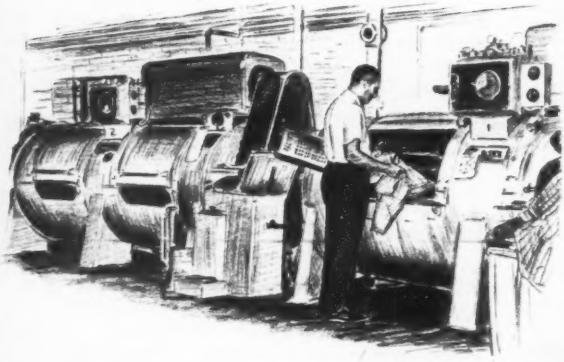
HOW THEY

This is what happens to tha

1. DRY CLEANING is a two billion-dollar business in America but the price for cleaning a suit ranges from only $1 to about $1.75 in different parts of the nation. When you take a soiled suit to your cleaner, it is given an invoice and store number and shipped to the plant where it undergoes a scientific cleaning by clothing experts.



2. ARRIVING at the plant, the clothes are separated as to color and fabric and are weighed to conform to the load capacity of the cleaning machine which usually varies from 35 to 100 lbs. Drawings show Prosperity Service Stores, Inc., Queens, N. Y. shop.

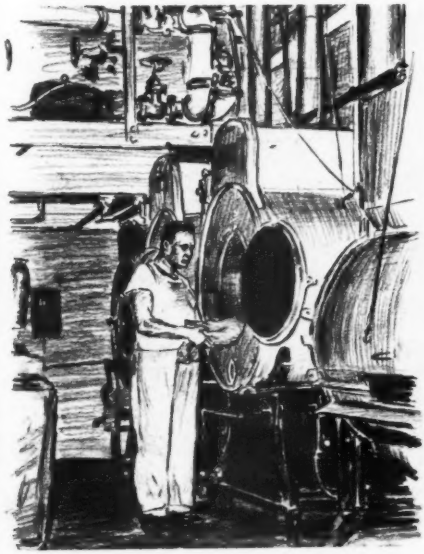


3. CLOTHES go into cleaning machine and solvent or cleaner is pumped up from tanks into giant filters which pick up all impurities. Clear solvent then passes through garments and removes all soluble stains. When clothes are removed from automatic machine, though dry to touch, they still retain some of the solvent.

DRY CLEAN YOUR SUIT

gravy-stained suit when you take it to be "cleaned and pressed."

Illustrations by J. George Janes

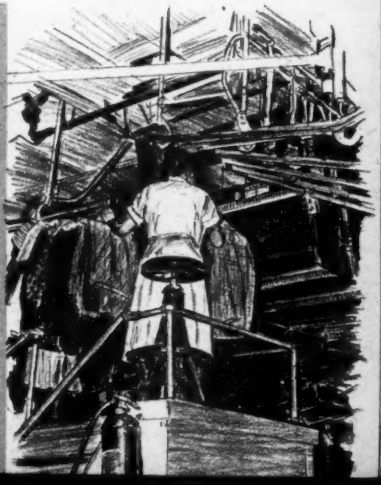


4. GARMENTS go from cleaning to a tumbling and deodorizing machine which removes all the remaining solvent from them. When this cycle is completed, the clothes are removed, given to spotter for inspection.

5. SPOTTER is key employee in cleaning operation. It is his job to rid clothes of remaining stains. He must analyze stain and decide what particular solvent will remove it without damaging fibers of the material.

6. PRESSER puts jacket on special mold. Air "forms" most wrinkles out; it is then finished on steam press. Pants also go onto the steam press.

7. CONVEYER system now moves clean garments to proper slot where they'll automatically drop out of line and await return to neighborhood store.



OUTDOORS
with
W. Scott Duncan

LEARN TO USE A COMPASS

ONE summer afternoon, while hiking into the Adirondack forest to a trout stream far from the nearest trail, I suddenly came upon three frantic people: a man, a woman and little girl hardly more than eight. The woman ran toward me crying hysterically that they were lost.

When I had calmed them down, I learned they were camping for the first time in a big woods. They hadn't eaten since the night before and had no idea where their camp was.

The man said, "I took out a compass I bought for just such an emergency. But all it does is point north!"

If this man had taken a few minutes to learn how to use his compass when he bought it, he could have saved his family and himself much needless worry.

A compass is easy to use and should be standard equipment for outdoorsmen. The ability to read a compass will enable anyone to travel safely through wild country in any direction.

Another great aid to wilderness travel, in addition to a compass, is a reliable topographical map of the area in which you will camp, hunt or fish. The best maps are the U. S. Geological Survey Quadrangles. A folder describing them is available from the U. S. Geological Survey, Washington 25, D. C. No one should ever go camping, fishing or hunting in unfamiliar territory without one of these quadrangles.

First, however, learn to use a compass without the benefit of a map. Suppose you just want to hike into the woods a mile or so from camp and be sure you can return the same way. A safe way to learn is to select a wooded area near home that is roughly a mile square.

Tie a white handkerchief to a tree trunk so it can be seen from a distance and let that be your camp. Place your compass on a level spot away from any metal, especially iron and steel. A compass is an instrument containing a magnetic needle swinging on a free pivot and pointing to the magnetic north. Keep your compass away from guns, knives, belt buckles, metal buttons, clasps, snaps, fish hooks and other metallic objects, for they will influence the needle and make your compass reading inaccurate.

When the needle has stopped swinging, turn the case so the N on the direction markings on the compass face is exactly on the N point of the needle. Select a nearby landmark (tree, rock, hilltop, etc.) that lies in the exact direction you will travel. For example, say this is southwest. Make a note of this in a notebook you will carry for this purpose. Then walk to this landmark and stop. Now look back over your trail. Note how different the land appears from this view. That is the way it will look to you when you retrace your steps. Also note that your camp is northeast of you and your destination southwest. [*Continued on page* 167]

LITTLE Chuck Williams fires little cannon by yanking on the lanyard.

Do-It-Yourself Cannon

BUILDERS. Arthur Williams swabs bore and Bill Shuster aims before firing another shot.

CANNONEERS William Shuster and Arthur Williams of Waukesha, Wis., are both interested in building and reconditioning historical firearms. If they can't find what they're looking for, they build it themselves. That's what they did with the half-scale replica of the Napoleonic cannon in Waukesha's Cutler Park. Williams, caliper in hand, measured it.

"After working four months off and on, Bill and I made everything but the bolts and wheels," Williams says.

The cannon shoots accurately at 100 yards and has a 500-yard potential. It fires a solid three-pound cast iron ball and is triggered by lanyard. The only danger in shooting the cannon is if a live spark remains to ignite the next charge. Great care is taken to swab out the bore. Powder is then loaded in the muzzle and wadded tight. The projectile—ball, canister or scrap iron—is rammed home and—boom! •

—Joyce P. Fitzgerald

MODELS are leashed to center post by 52½-foot line. They race four laps which total a quarter-mile.

90-mph MODEL BOATS

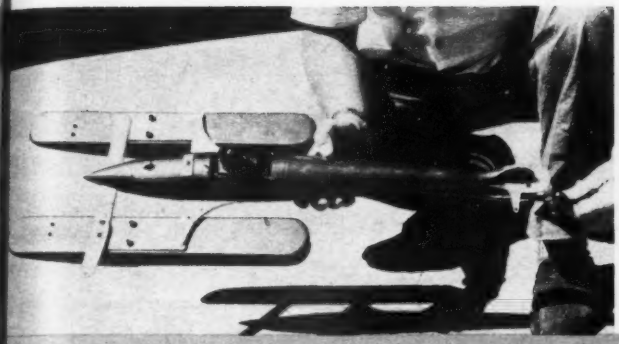
CHAMPION of last year's International Model Power Boat Association was a youthful 44-year-old grandfather from Garden City Park, N. Y., Max Biedermann. He took the title at the annual competition at Indianapolis, Ind., with his homemade 90-mph racer.

The model—a sleek, long-hulled hydroplane—is 33 inches long, six inches wide and weighs 12 pounds.

Biedermann is one of the 1,000 enthusiasts in the IMPBA and, like most members, builds his own craft including the one to three-hp engines which run on a mixture of alcohol, castor oil and nitro-methane. The model-maker builds his midgets of mahogany aircraft plywood. He owns eight racers.

Biedermann's swift craft and know-how have earned him the rank of commodore in the New York Model Power Boat Association. •

BOAT races clock. Motor is started by owner who wades into water.



SLEEK hydroplane is one of Biedermann's 90-mph jobs. Builder says "Propeller design, fuel mixture and balance" are keys to controlling speed of boats.

BOAT HOLDER is special rack used by the hobbyist to transport his hydroplanes.

VETERAN boat builder works on new hull for one of his prize-winning hydroplanes.

MODEL-MAKER poses with some of the more than 75 trophies he's won in midget racing.

HULL DESIGNS are "filed" from rafters, awaiting new props or reworked engines.

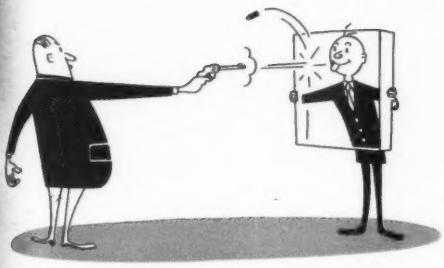
WHITE FLAG signifies victory as winning team slams hood shut. Engine has been repaired.

CONTEST FOR TROUBLE-SHOOTERS

THE trouble-shooters in Chrysler Corp's. sixth annual contest sponsored in 16 U. S. cities are all high school boys. The purpose of the contest is to encourage the students to become auto mechanics. Prior to the event, Chrysler officials devise a number of malfunctions in the Plymouth cars used in the contest. On signal, the two-man teams from each high school—using a minimum of tools and equipment—compete to diagnose and correct the mechanical difficulties of the cars. The first team to make proper repairs and to get its vehicle operating, wins a trophy and model Plymouth cars. •

CONTEST at Abington High School in Pennsylvania had avid mechanic (above) looking at manual. Boys (below) get into things.

WINNERS got trophy and model Plymouth cars. These two boys, seniors, also got jobs as apprentice mechanics in Philadelphia.



ICE ODDITIES

DURING the many wars between the Finns and the Russians, blocks of ice have been used like sandbags as protection against enemy fire. As late as World War II both the Russians and the Germans used frozen lakes and rivers as highways. The Russians have built railways on the ice, and such a railway was proposed to carry lend-lease supplies across the Bering Straits.

A ship was built of ice in World War II. Wood fiber was mixed with water and frozen; the resulting solid, called Pykrete after Geoffrey Pyke, its inventor, was remarkably strong. A rod made of it, one inch in diameter, could support six men. A four-inch-thick sheet stopped bullets. The wood fiber insulated the ice against heat so well that a five-foot cube had to be boiled four days to melt it. The idea came from the Eskimos who mix moss with water to freeze into strong igloo material.

Inventor Pyke proposed construction of an "unsinkable" aircraft carrier made of Pykrete. His design was to weigh 1,700,000 tons; 2,000 feet long, it would carry 200 fighters and 100 bombers. Like an iceberg it would be so big it would not roll or toss in the worst of storms. It would carry a refrigerating plant to keep the hull below freezing; the hull would be 40 feet thick. Hull damage could be repaired with hoses at sea.

A test ship was built of Pykrete on Lake Patricia, Ontario. It was 60 feet long with a 30-foot beam. Engines shoved the 1000-ton ship forward at seven knots. Throughout the hot summer of 1943 it cruised the lake; the ice ship was a success. But the war moved so fast that the need for huge ice ships was past before any were built. There may yet be a use for Pykrete ships, of course; possibly as bases for scientific observatories in the Arctic.

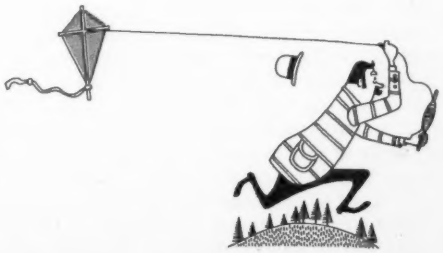
—Leverett G. Richards

RADIO IN 1866?

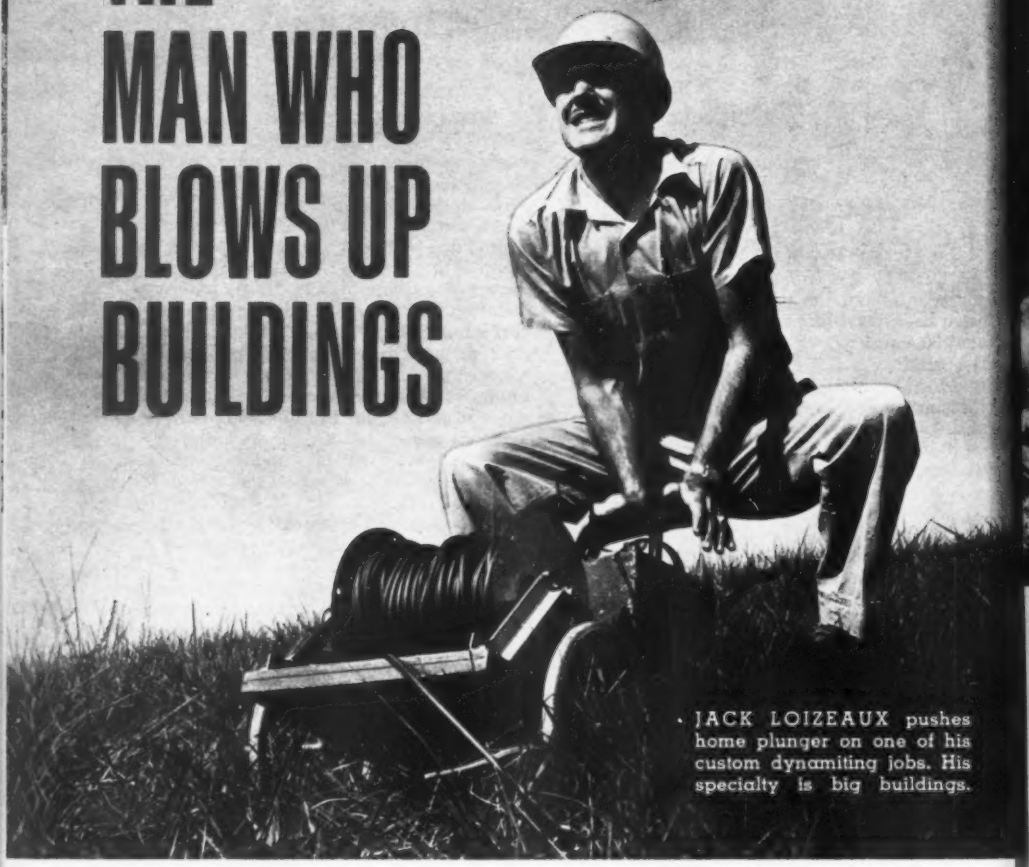
IF you care to read the fine print in Patent No. 129,971, entitled Improvement In Telegraphy, you will find that Mahlon Loomis, a Washington, D. C., dentist, was granted a patent in 1872 on what we know now as radio telegraphy.

That was two years before Marconi was born. As early as 1866 Dr. Loomis had successfully demonstrated his "aerial telegraph" on neighboring mountaintops in the Blue Ridge region of Virginia. Kites fitted with strips of copper gauze along their edges were flown at each site. The ground ends of the 700-foot kite strings were submerged in water. Signal reception was shown on galvanometers. In his patent application Loomis stated that reception was perfect on cloudy days—"as exact and distinct as any ever travelled over metallic conductors." In his 1866 experiment Loomis transmitted readable signals a distance of more than 18 miles; 30 years later Marconi was signaling a mere mile.

Why didn't Loomis' patented invention succeed? Why is he not credited as "the father of radio" instead of Marconi? Two things kept his invention back. First, Loomis did not realize that his device employed radio waves. He believed that he was obtaining a current of electricity in the upper atmosphere by upsetting the equilibrium of a body of positive electricity that was up there waiting to be used. Second, he could not obtain the backing he wanted from a Congress that was buried under the terrible weight of "practicality." The men to whom he applied for assistance saw him as a mere crank. If he had continued his experiments he might have discovered his error, which was not as important as his having found a way to send wireless messages. We need not strain the facts to find a parallel with later inventors who have found "hard common sense" blocking the way to the future. *—John D. Lenk*



THE MAN WHO BLOWS UP BUILDINGS



JACK LOIZEAUX pushes home plunger on one of his custom dynamiting jobs. His specialty is big buildings.

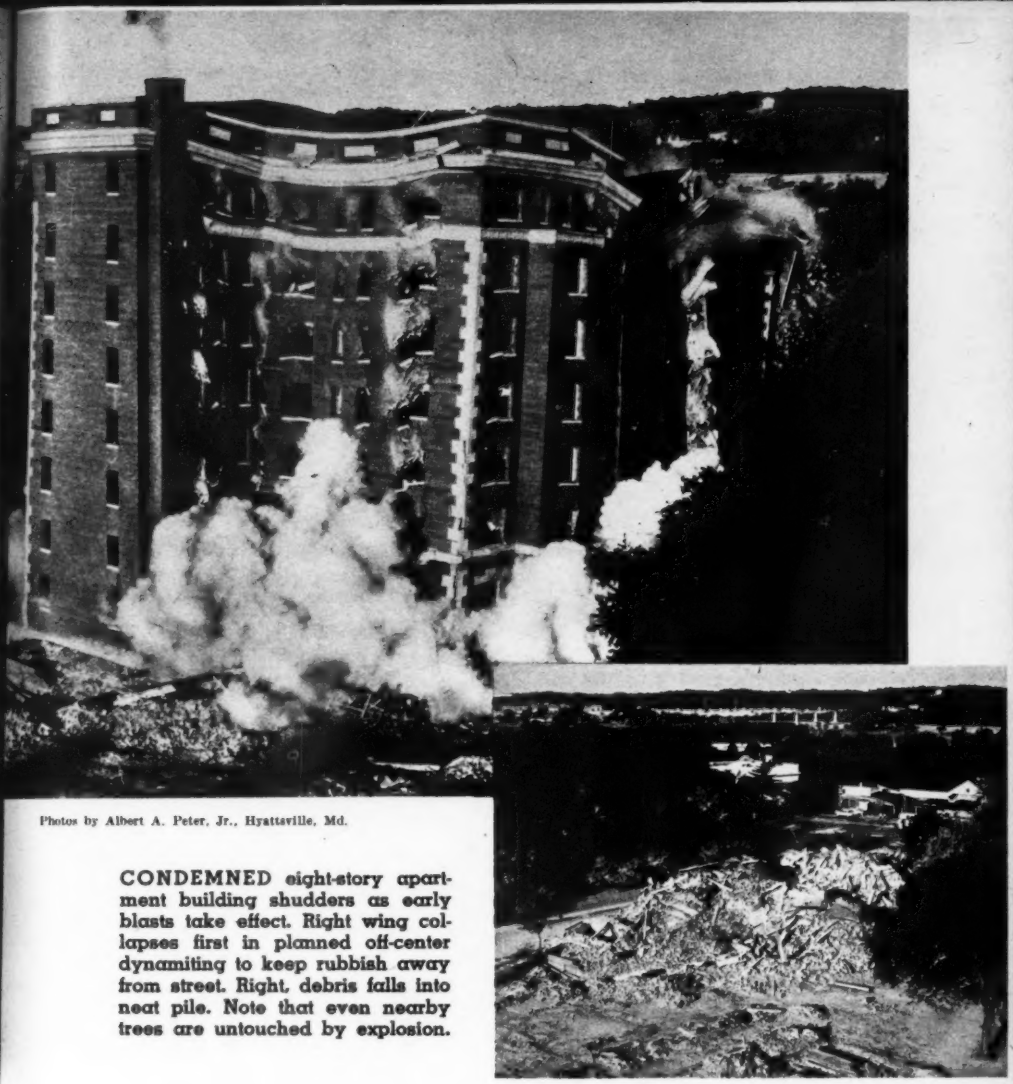
By William F. Hallstead

AN early morning stroller in Washington, D. C., in July 1957 noticed some sort of excitement was afoot at C and 22nd Streets. Police had barricaded the block and a group of officials were waiting expectantly.

A whistle shrilled and the onlookers tensed. The stroller sensed that something big was about to take place—but he wasn't at all prepared for what happened next.

He heard a muffled series of popping explosions. Then a sustained roar of fracturing and falling masonry filled the air. Before his bulging eyes an eight-story apartment building suddenly vanished. The cloud of dust drifted away on the light breeze and where the building had stood there was now only a compact heap of broken rubble. The total destruction of the big reinforced concrete structure—one of three condemned apartment buildings in the same block—had taken exactly 17 seconds!

This job was the handiwork of a



Photos by Albert A. Peter, Jr., Hyattsville, Md.

CONDEMNED eight-story apartment building shudders as early blasts take effect. Right wing collapses first in planned off-center dynamiting to keep rubbish away from street. Right, debris falls into neat pile. Note that even nearby trees are untouched by explosion.

gentleman named Jack Loizeaux, an explosive engineer whose skill with a case or two of dynamite is a highly uncommon art. Pioneering in a profession where your first mistake can neatly cancel your hard-won insurance and suddenly put you out of business, Jack Loizeaux, president of Baltimore's Burnbrae, Inc., has proved that the real key to success in the custom dynamiting game is imagination—providing that you have the know-how to go with it.

A custom dynamiting outfit will tackle anything that can be safely and efficiently knocked apart with explosives. Jack's company has handled work ranging from the mightiest to the most delicate. They have blown the tough rock bottom out of a seaplane basin by laying 30,000 pounds of explosives on it and have dynamited hardened concrete out of a ready-mix truck with no damage to the truck!

One of Burnbrae's unusual services is chimney felling. Jack has dropped them where clearance was just 36 inches. Want a warped blast furnace floor taken [*Continued on page* 166]

HOME * CRAFTS * SHOP

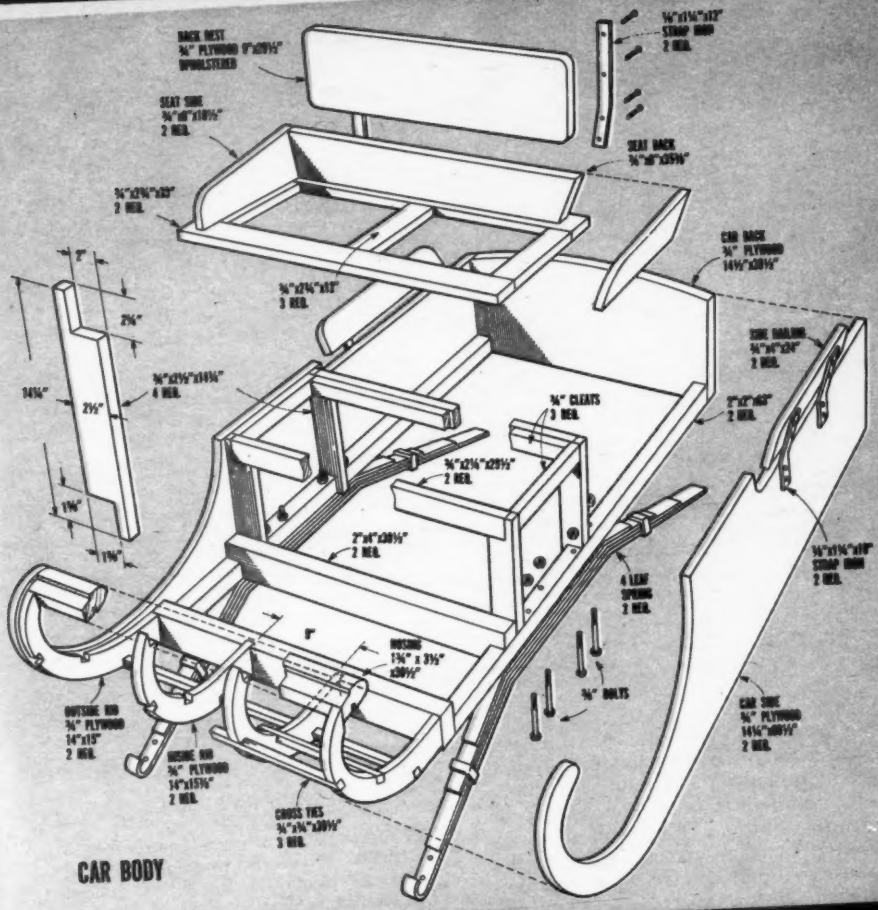
Build This 1901 OLDSMOBILE!

Elegant styling • Four horsepower • 30 miles per hour • 70 miles per gallon. Boy, oh boy, this is the car to own!

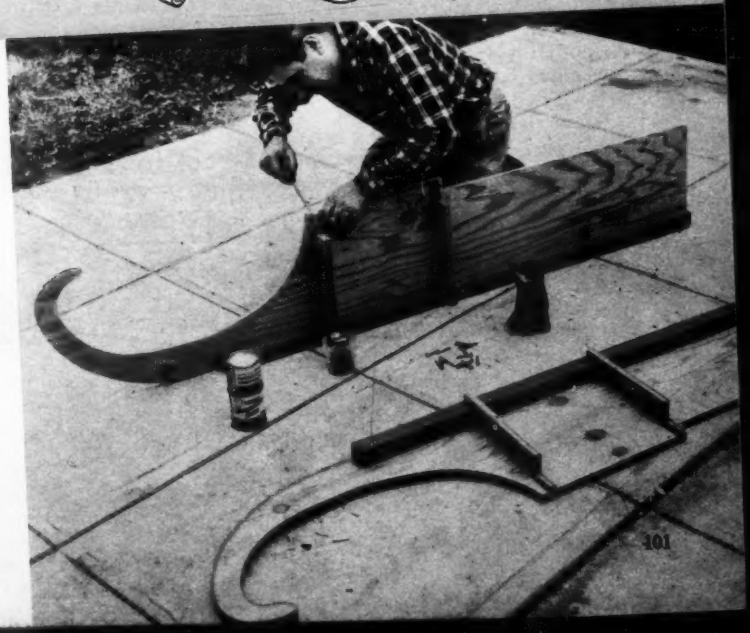
By John and Ro Capotosto

"THIS graceful and practical Automobile will do the work of six horses at an average cost of $35 a year (10,000 miles). Board alone for one horse costs $180 a year, so the economy is very evident. . . . Price $650." That, friends, is quoted from an advertisement circulated in 1901 by the Olds Motor Works of Lansing, Michigan on behalf of their 1901 Oldsmobile.

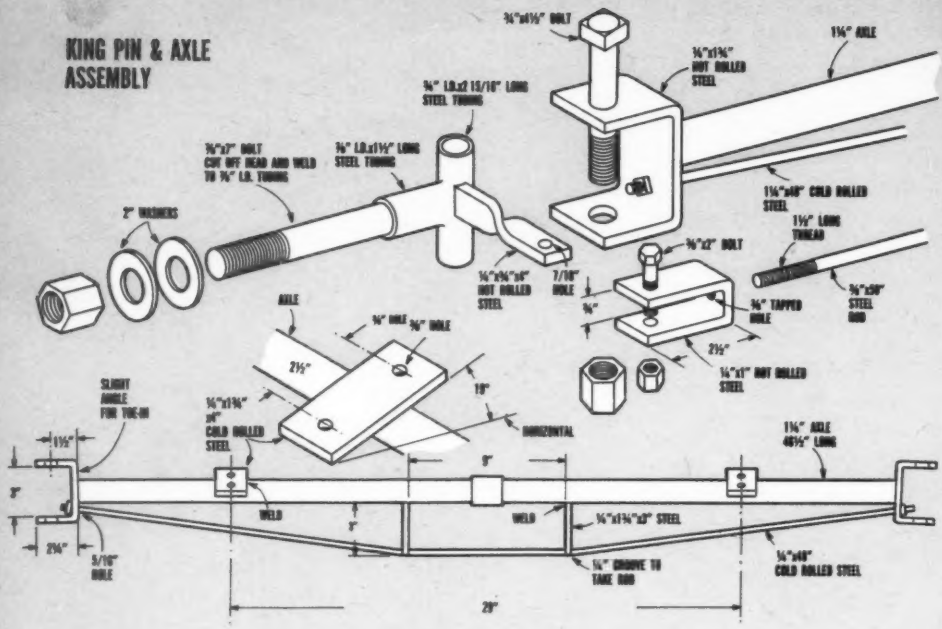
Well, Detroit (and horses, too) take notice! Fifty-nine years later MI is



CAR BODY



WATERPROOF glue and screws are used to fasten the framing cleats to the plywood body.



going to show do-it-yourself enthusiasts how to build their own modern ¾-size reproduction of the 1901 Olds. Authentically detailed, this job is not a toy or plaything but an honest-to-goodness horseless carriage sparing none of the quaintness or character that was embodied in the original.

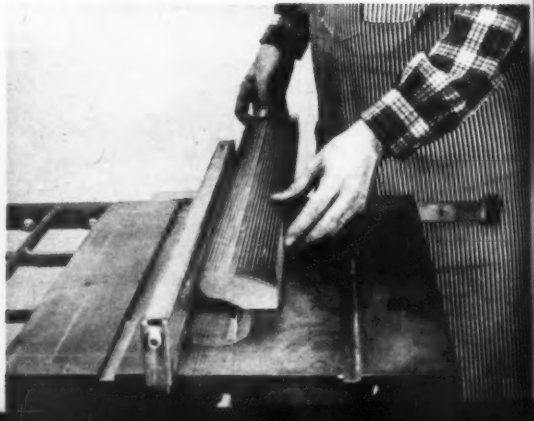
Not meant for heavy driving, of course, but ideally suited as a second car, this rig is excellent for those weekly

PLANS AVAILABLE

A complete set of plans containing 16 detailed drawings, photographs and text are available. Send five dollars to Mechanix Illustrated Plans Service, Greenwich, Conn. Please ask for Plan No. 1901 Oldsmobile when ordering.

DRILLING pilot holes through seat framework. Seat is screwed in place, no glue.

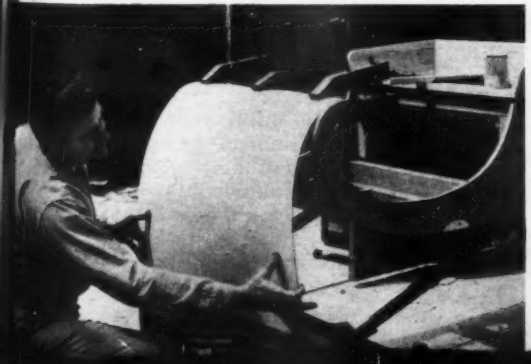
COMPLEX shape of the body crown is made by progressive grooving on circular saw.

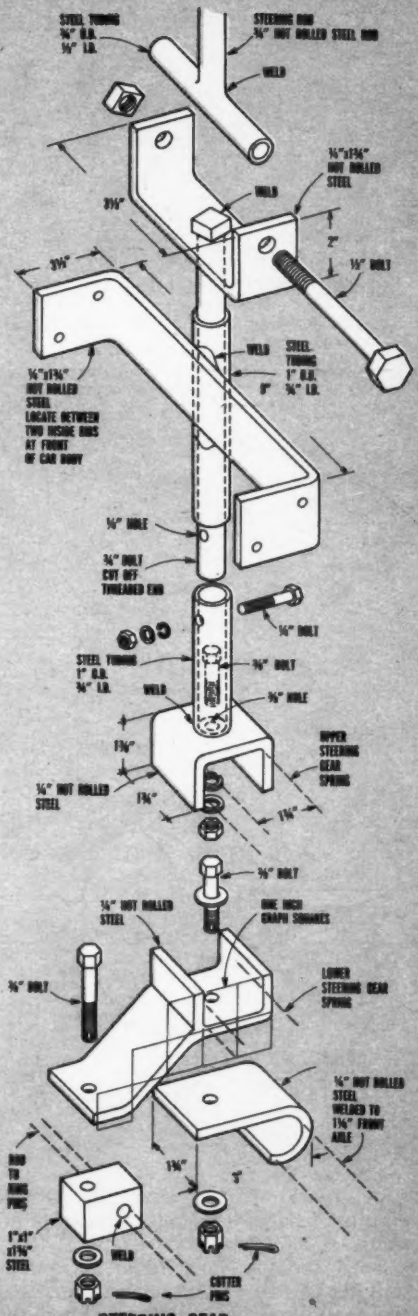


WITH BODY upside-down, springs are positioned for location of holding bolts.

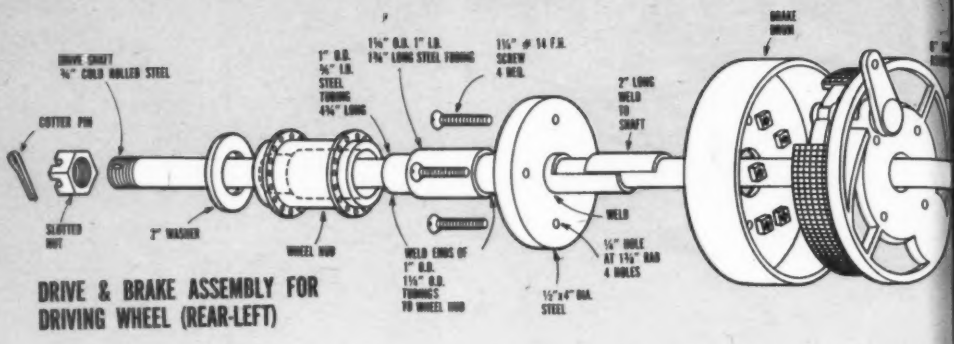
RIBS and braces, screwed and glued in place, prior to attaching curved bottom.

PLYWOOD, ⅛-in. thick (plus screws and glue) is used to make up curved buckboard.

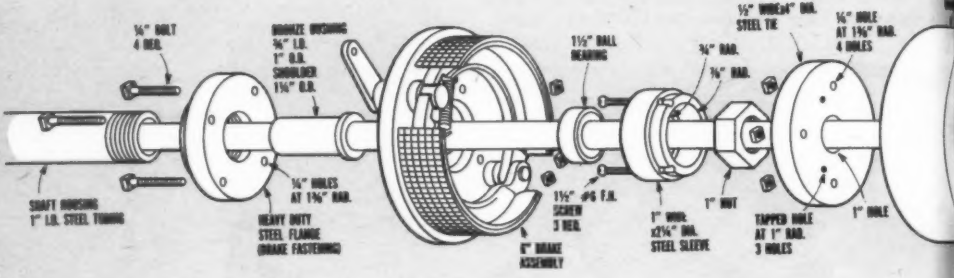




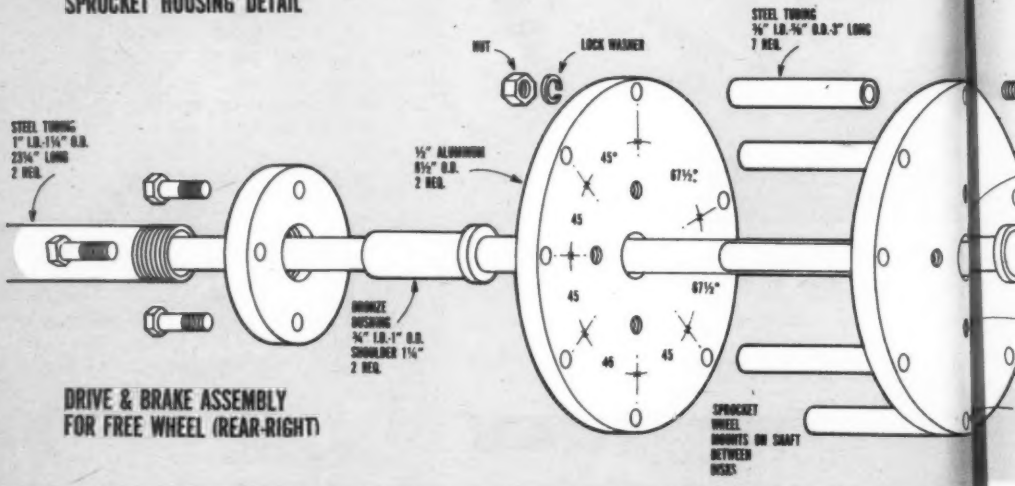
STEERING GEAR LINKAGE DETAILS


DRIVE SHAFT ¾" COLD ROLLED STEEL
COTTER PIN
SLOTTED NUT
3" WASHER
1" O.D. ⅝" I.D. STEEL TUBING 4¾" LONG
WHEEL HUB
1¼" O.D. 1" I.D. 1¼" LONG STEEL TUBING
WELD ENDS OF 1" O.D. 1⅛" O.D. TUBINGS TO WHEEL HUB
1¼" # 14 F.H. SCREW 4 REQ.
½"x6" DIA. STEEL
2" LONG WELD TO SHAFT
WELD
¼" HOLE AT 1⅜" RAD 4 HOLES
BRAKE DRUM

DRIVE & BRAKE ASSEMBLY FOR DRIVING WHEEL (REAR-LEFT)


⅜" BOLT 4 REQ.
BRONZE BUSHING ¾" I.D. 1" O.D. SHOULDER 1¼" O.D.
SHAFT HOUSING 1" I.D. STEEL TUBING
¼" HOLES AT 1⅜" RAD.
HEAVY DUTY STEEL FLANGE (BRAKE FASTENING)
1½" BALL BEARING
1½" #6 F.H. SCREW 3 REQ.
8" BRAKE ASSEMBLY
¾" RAD.
⅜" RAD.
½" WIDE x4" DIA. STEEL TIE
⅜" HOLE AT 1⅜" RAD. 4 HOLES
1" NUT
1" HOLE
TAPPED HOLE AT 1" RAD. 3 HOLES
1" HOUS. x2¼" DIA. STEEL SLEEVE

SPROCKET HOUSING DETAIL

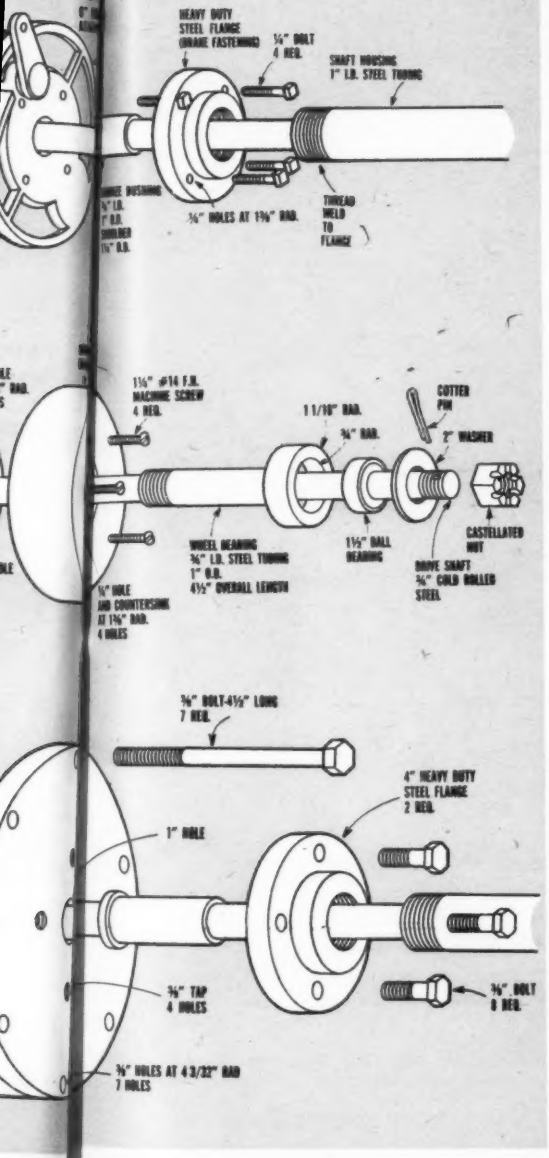


DRIVE & BRAKE ASSEMBLY FOR FREE WHEEL (REAR-RIGHT)

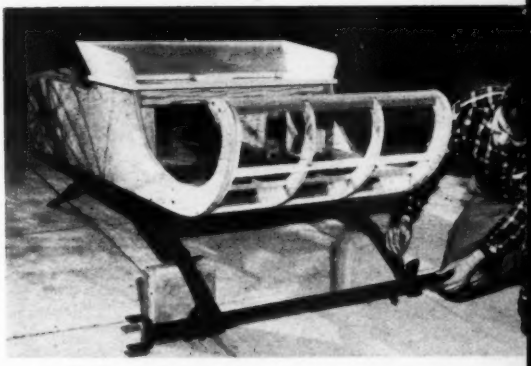
super market trips, short-hop errands and just perfect for Junior's date operations.

Sure, today's sleek metal mastodons will get you there and back in such extreme comfort you will hardly know the car was in motion. That's okay if boredom doesn't get you. But if you're hankering for an old-fashioned, *enjoyable* car ride, then hop aboard this buggy and take off—adventure awaits you!

The first difference you'll note is that you climb *up* to get in the MI Olds, not down. Then notice the luxury of ample

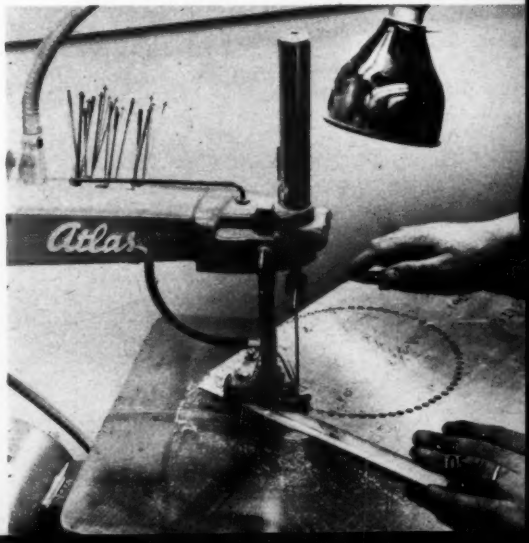

HEAVY DUTY STEEL FLANGE (BRAKE FASTENING)
¼" BOLT 4 REQ.
SHAFT HOUSING 1" I.D. STEEL TUBING
¼" HOLES AT 1⅝" RAD.
THREAD WELD TO FLANGE
1¼" #14 F.H. MACHINE SCREW 4 REQ.
1 1/16" RAD.
⅜" RAD.
COTTER PIN
2" WASHER
CASTELLATED NUT
WHEEL BEARING ⅜" I.D. STEEL TUBING 1" O.D. 4½" OVERALL LENGTH
1½" BALL BEARING
DRIVE SHAFT ¾" COLD ROLLED STEEL
¼" HOLE AND COUNTERSINK AT 1¾" RAD. 4 HOLES
⅜" BOLT-4½" LONG 7 REQ.
4" HEAVY DUTY STEEL FLANGE 2 REQ.
1" HOLE
⅜" TAP 4 HOLES
⅜" BOLT 8 REQ.
⅜" HOLES AT 4 3/32" RAD 7 HOLES

WELDING the kingpin arms and the spring supports. Note the use of the pipe clamp.

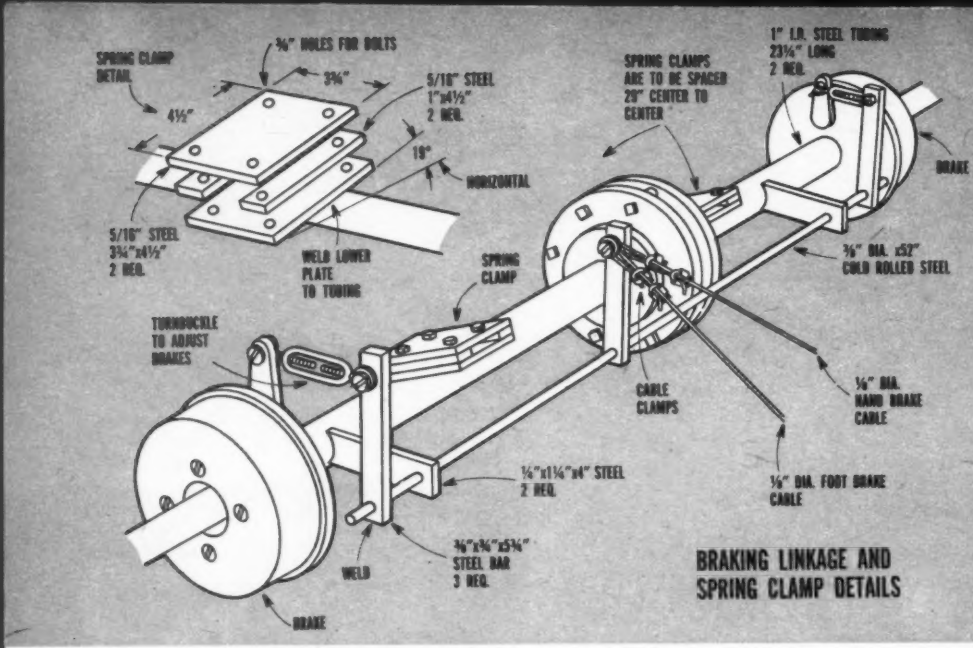


CLAMPS hold the axle in place as it is positioned in place at front of the car.

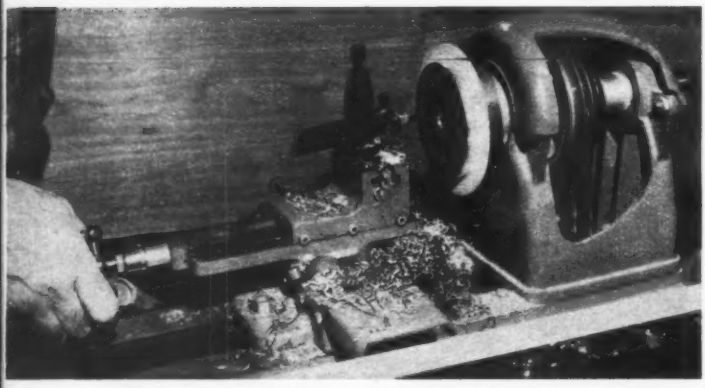
DRILLING holes in the aluminum plate for sprocket housing eases cutting job.



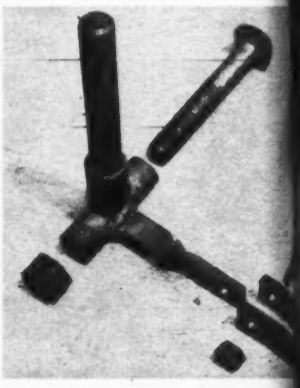
headroom. Step on the gas, steer with the tiller and away you go. You can feel motion, there's a lilting springiness in the ride. You're in another age! Air conditioning comes without push buttons as you chug along in this graceful job which will do 30 mph and deliver



BRAKING LINKAGE AND SPRING CLAMP DETAILS



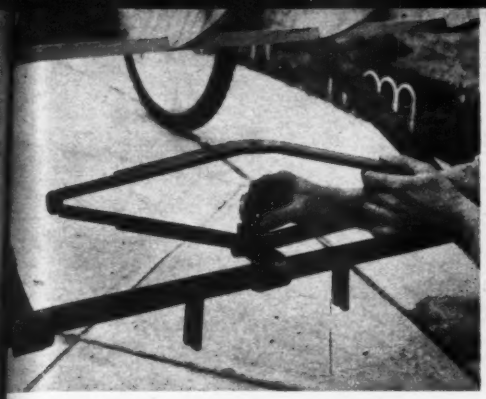
FACE PLATE TURNING on the lathe will bring the blank to its final diameter.



THIS is the kingpin assembly, ready for installation on the chassis of the Olds.

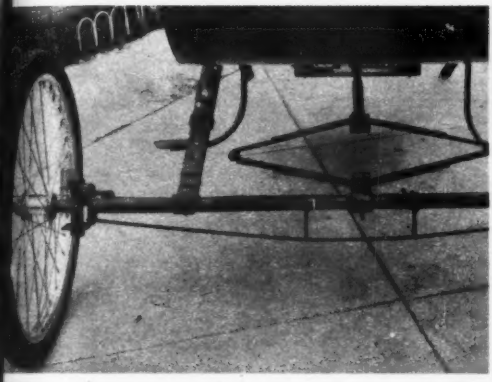
A LINCOLN ARC WELDER, 100 proved to be of great help in making the car's chassis.

JIG for bending the eyes in the spring is made with two rods in a steel block.

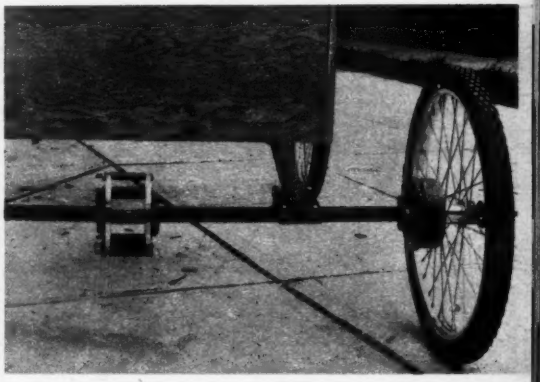


ASSEMBLING the front-end spring in the chassis in order to check its alignment.

EXPLODED VIEW of the rear brake assembly. The brake is of internal expanding type.



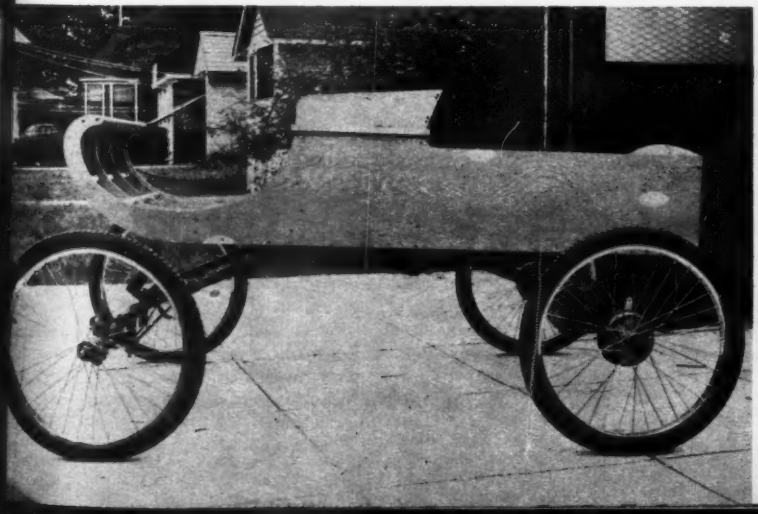
HERE is the completed front end of our car. The car uses 2.125x26 inch tires.

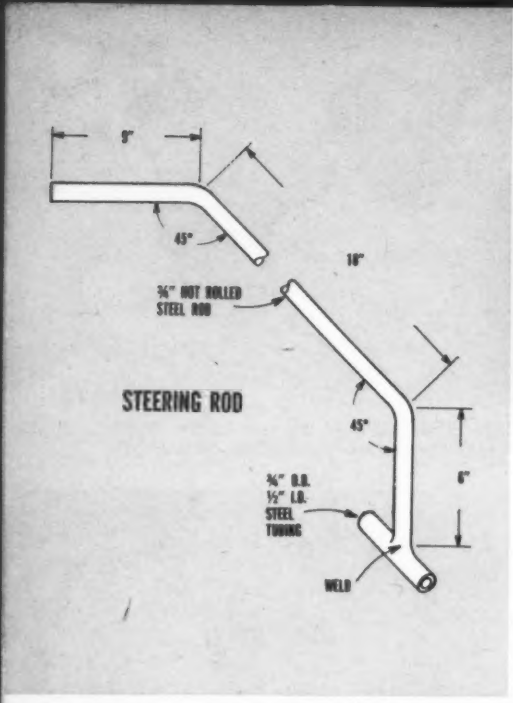


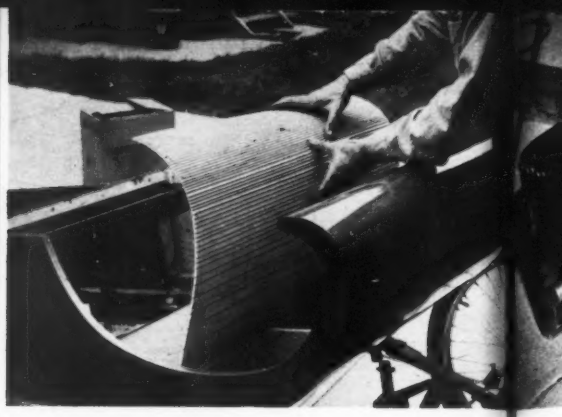
AND HERE is a progress view of the rear end. Bottom of shackles are welded to axle.

SIDE ELEVATION of partially completed car. Okay to admire car at this point!

FLOOR VIEW showing pedal assembly. Note stoplight switch is connected to brake.



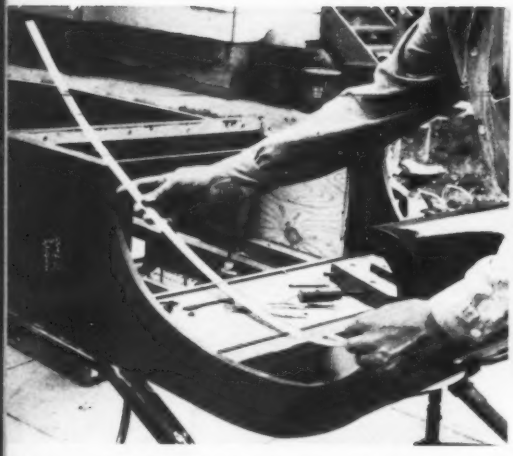




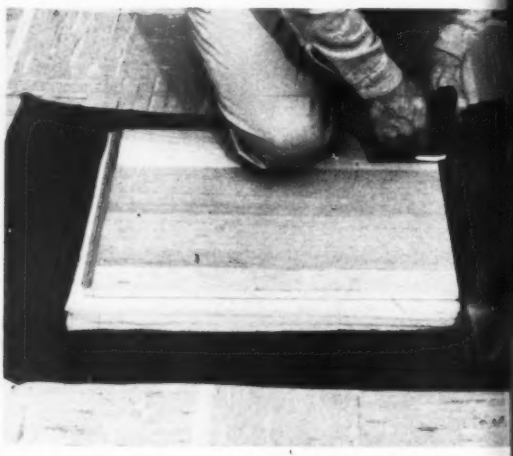
HEAVIER quarter-inch plywood used for inside floor board is grooved for bending.

The power plant consists of a Clinton B 1290-1230 air-cooled single cylinder, four hp engine. The drive is through a Mercury GW 12-30 centrifugal clutch and thence through a Cushman Transmission No. 0802 which provides two speeds forward and one reverse. A sprocket and chain drive delivers power to the rear wheels. One wheel does the driving; the other is free-wheeling to eliminate the need for a differential. Thus costs and complication of construction are kept to a minimum.

Specifically, power transmission is as



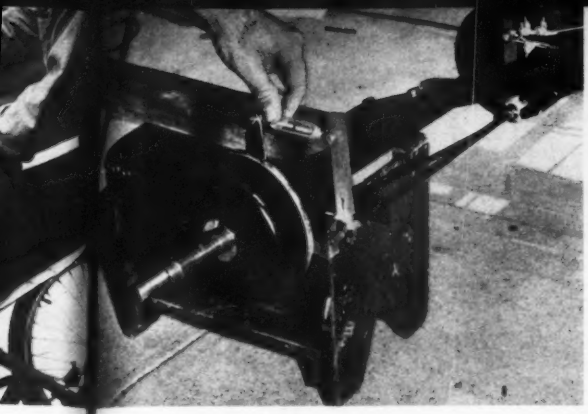
ANODIZED aluminum molding is used as a trim and to hide raw edges of plywood.



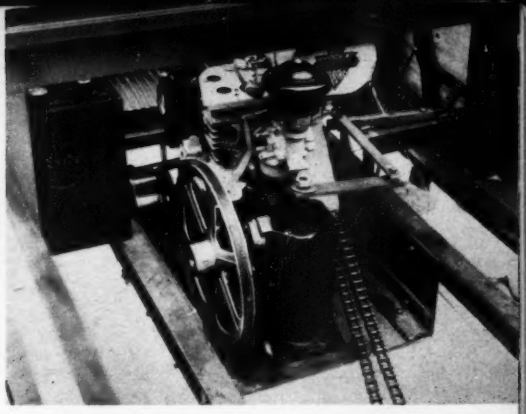
POLYUTHERANE pad and black Boltaflex stapled to baseboard make up the seat.

round 75 mpg at half-throttle opening.

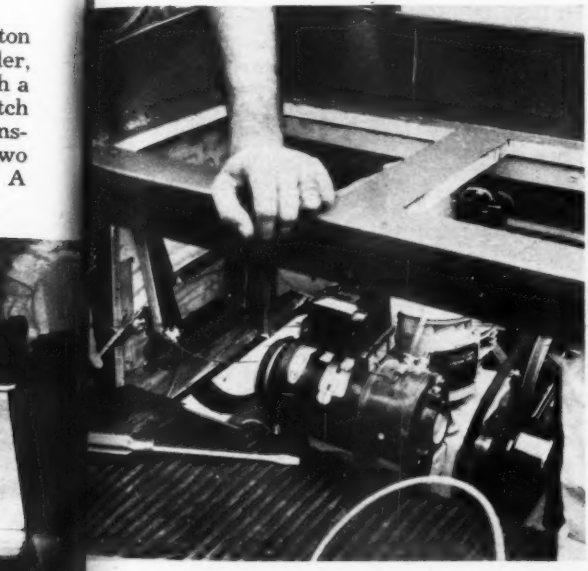
You can build this dream for less than $500. Study the following pages, then get right with it. The pleasurable hours you spend recreating this nostalgic bit of Americana will be as rewarding as the joys of riding in it.



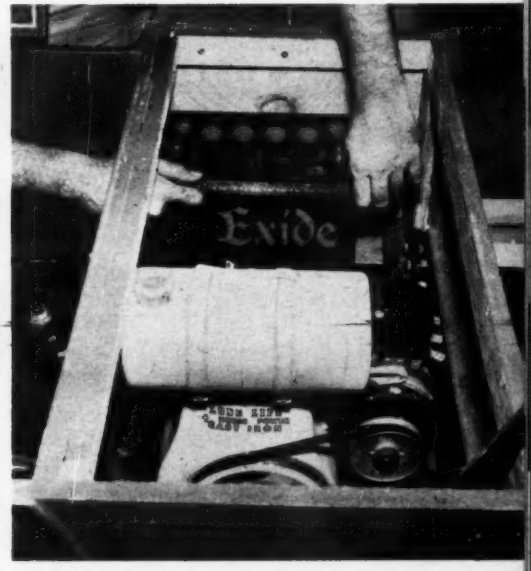
A TURNBUCKLE is used for adjusting the brake; it is then locked in place with wire.



VIEW from the rear showing placement of the three-horsepower Clinton engine.



HAND BRAKE is applied by lifting lever at far left. Spring snaps it into place.



INSTALLING the battery. Housing for battery is made of ⅛x1-inch strap iron.

TIGHTEN all bolts on the engine before installing it in the chassis.

THE CANOPY FRAMING is made of electrical conduit tubing. It's bent with a hickey.

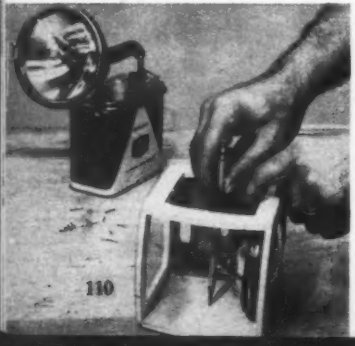
SHEET METAL brackets with offset holes, permit canopy frame to be tilted to rear.

THE BRACKETS for holding canopy are made of 3/16x-¾-inch hot rolled steel.

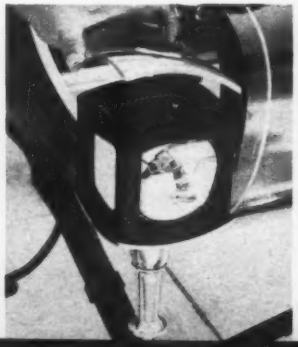
LIGHT WEIGHT CANVAS used for making the top can be made on a sewing machine.

follows: At idling speed the clutch is designed to slip, resulting in no power transmission. As engine RPM are increased, centrifugal force causes the clutch to engage. A belt from the clutch drives a ten-inch pulley on the input shaft of the transmission. The output shaft drives a 12-tooth sprocket and roller chain. Shifting of gears is accomplished by a hand lever located at the right of the driver's seat to obtain reverse or forward speeds.

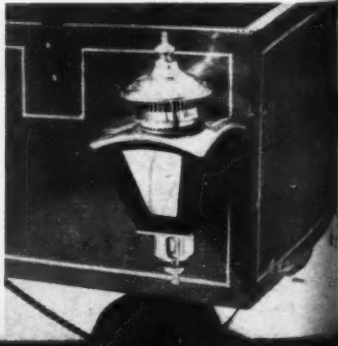
Brakes are of the internal expanding type with bonded linings. (Note: Our



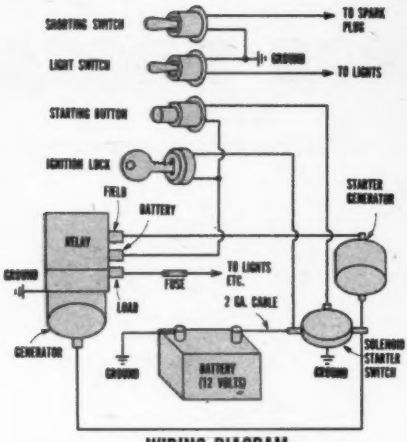
TWO sealed beam lamps from Eveready lanterns are used to make lighting system.



ASSEMBLING "headlamps" on front of car. Old car lamps were used as the prototypes.

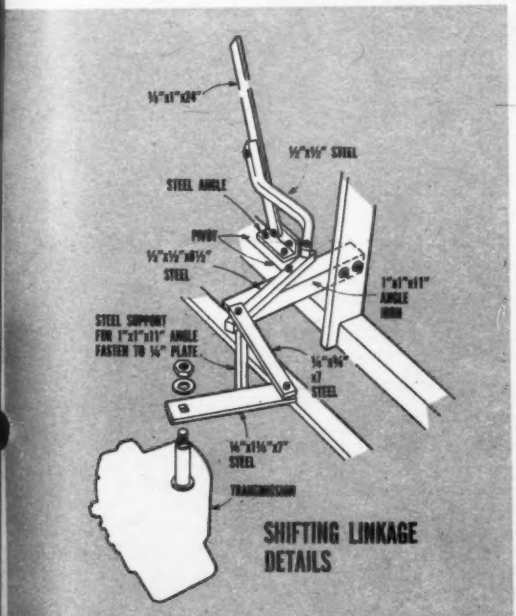


ONE double and one single filament bulb are required for each of two rear lamps.



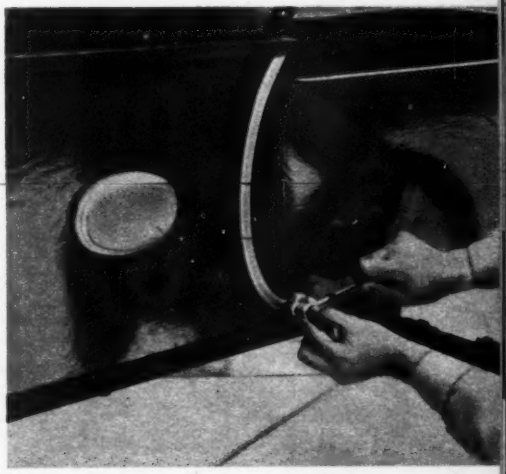
WIRING DIAGRAM

model only has rear wheel brakes. Some states require a four-wheel braking system so check with the Bureau of Motor Vehicles in *your* state.) The parking brake is operated by hand and is located at the lower right of the driver's seat. The simple lever hook-up provides positive braking action with little chance of failure. Foot and hand brakes are connected to the [*Continued on page* 134]



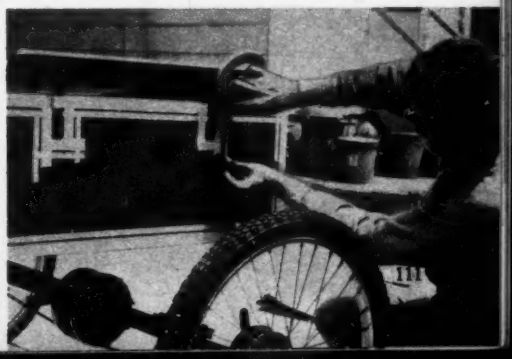
SHIFTING LINKAGE DETAILS

WHITE FIRZITE is used as an undercoat on the plywood. Next flat paint, then enamel.



CURLYCUES on the body and the edges of the plaque are trimmed with bronze paint.

STRIPING the car (Detroit's lost art!) is simplified by using masking tape as shown.



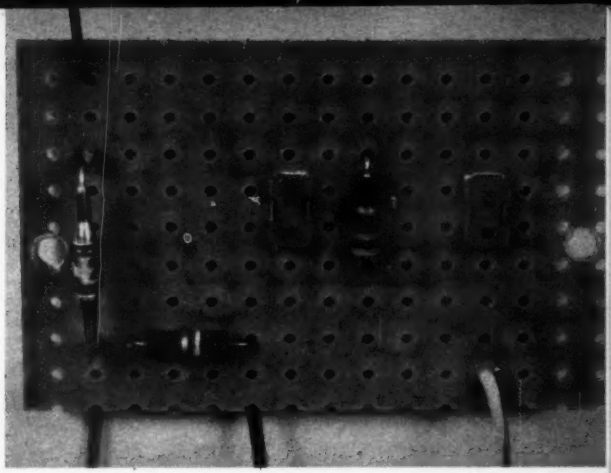
TRANSISTOR POCKET

Anyone can build this radio which was designed for

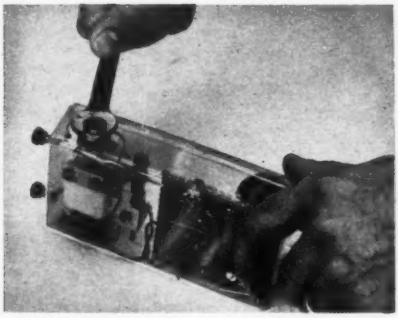
Los Angeles Dodgers photo by Mike Irene Sherwood

RADIO

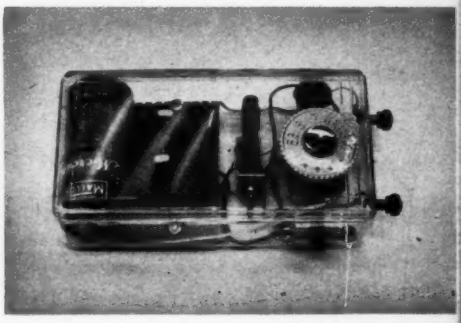
beginners in electronics.



PLACEMENT of components in sub-assembly is shown at the right. From left to right, D, R1, TR-1, R2 and TR-2.



EARPHONE JACK is tightened in hole bored in the side of the plastic case.



DIAL is secured to tuning capacitor shaft after the case lid is on.

By Harvey Pollack

THERE are literally thousands of electronic projects you might tackle just to get your hands into this fascinating field. But if a poll were taken among both experienced hobbyists and novices, the most popular item for home construction would still be the good, old-fashioned AM radio. When you build a radio, you wind up with something anyone in the house can use and enjoy.

The two-transistor radio described here was designed expressly with the beginner in mind. Read over these features:

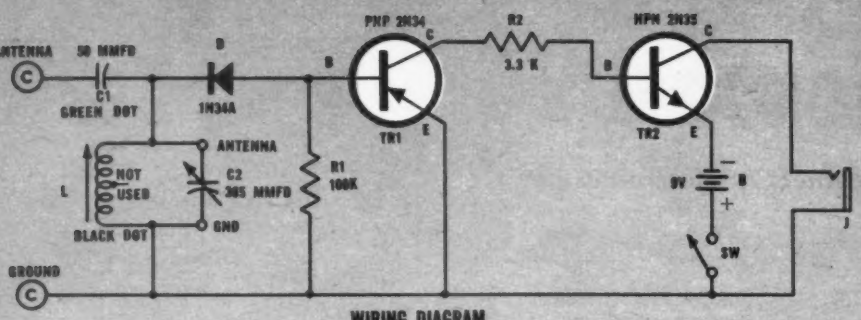
(a) It is semi-miniature; that is, it is small enough to fit into a jacket pocket but not so small that the wiring becomes a job for a jeweler rather than an experimenter.

(b) It uses a heavy-duty battery for long life (about 500 hours), yet the weight is not increased intolerably.

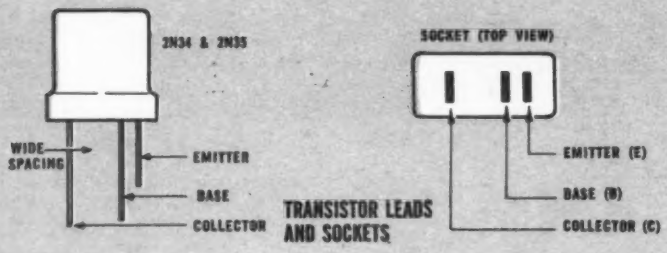
(c) It is very simple in concept and uses a minimum of parts, yet it outperforms many multi-transistor sets we have heard.

(d) Truly miniature parts such as resistors, capacitors, jacks, phone plugs, etc., are avoided to simplify construction.

(e) It requires no expensive instruments for aligning or tuning; this is done entirely by ear.



WIRING DIAGRAM



TRANSISTOR LEADS AND SOCKETS

(f) No metal work is required. The only drilling needed is performed on phenolic and plastic with ordinary hand tools.

(g) It is inexpensive. The total catalog price is approximately $8.00, less battery and headphone.

To start construction, first mount the Poly-vari-con tuning capacitor on its bracket and press the tuning coil into its bracket. Then cut a piece of perforated Bakelite measuring 1½x2¾ inches from the sheet suggested in the parts list. Looking down into the plastic case, place the tuning capacitor on its bracket at the extreme left, the tuning coil adjacent to it, and the piece of Bakelite about a half-inch away from that. Now test the remaining space at the right to see whether the battery fits in snugly. Dimensions have been selected so that no battery bracket is required; the battery is held in place tightly when the case cover is closed.

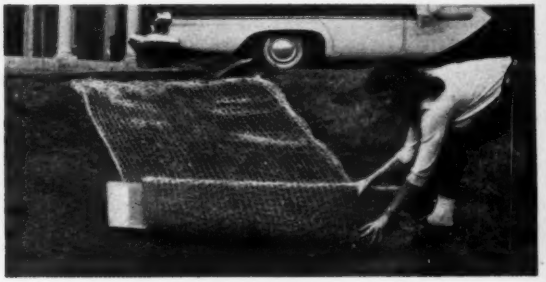
Drill the holes required in the plastic case for the parts mentioned above, placing the variable capacitor so that its shaft will come up through the cover exactly one inch from the left edge and 1¾ inches from the front edge. This leaves room for the earphone jack in front of the capacitor, the two binding posts (antenna and ground) to its left and the on-off switch on the panel behind it. The square hole for the slide switch is easily cut by first drilling a quarter-inch round hole and then shaping it out with a small file. Mount the earphone jack, the binding posts, the slide switch, the variable capacitor and the tuning coil in their proper places. These are then ready to be wired later.

The little Bakelite sub-assembly is now prepared and wired, bringing out four-inch leads for connection to the fixed components. Study the photographs and note the relative positions of the crystal diode, the two resistors and the two transistor sockets. *Do not have the transistors in their sockets while wiring.* They are clipped to ⅝-inch lead lengths and inserted in their sockets as the very last step. The transistor sockets are secured by [*Continued on page* 142]

NEW GARDEN PRODUCTS

TWO-WAY sprinkler has holes in hollow spike for sub-surface irrigation: **$4.95.**

Proen Products Co., 9th & Grayson, Berkeley 10, Calif.



JUTE MATTING prevents soil washout on grade, rots after grass has grown through.

Ludlow Mfg. & Sales Co., Box 101, Needham Heights, Mass.

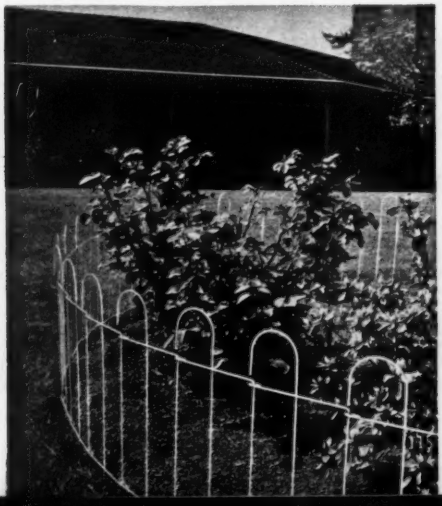
A handbook, "How To Prune," is sold for ten cents by Seymour Smith & Son, Inc., Oaksville, Conn. . . . A new weed killer in an aerosol doesn't form a mist which can harm surrounding plants. Target, made by Demert & Dougherty, Inc., Chicago, is aimed at the weed; short burst causes the weed to dry up, root and all. . . . Get a free 24-page booklet outlining the scientific approach to gardening in layman's language by writing to Bolens Products Div., Food Machinery & Chemical Corp., Port Washington, Wis. . . . MCE, a high-concentrate chlordane, kills crabgrass and lawn insects. It's sold by Lethelin Products Co., 15 S. MacQuesten, Mt. Vernon, N. Y. A gallon, mixed with water, treats 5,700 sq. ft. . . . A soluble lawn fertilizer that provides grass with a high concentration of nitrogen, phosphorus and potash is sold by FX-Lab Co., 77 Okner Parkway, Livingston, N. J. A six-pound package costs $4.98. With a spray gun proportioner included, the price is $7.96.

TREE DRESSING in aerosol can forms a protective seal after pruning or damage.

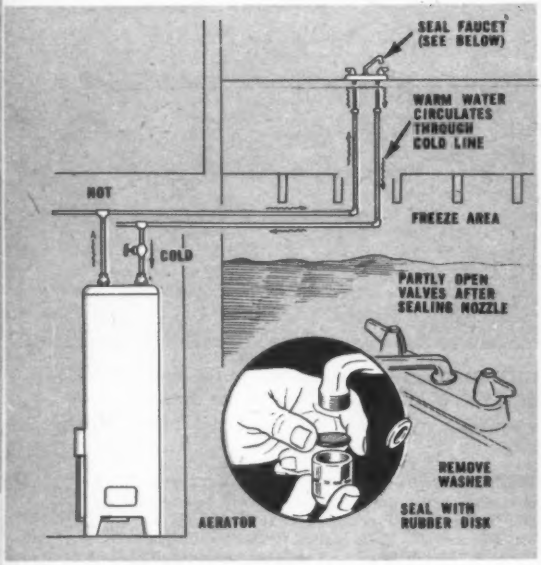
Boyle-Midway, 22 E. 40th St., New York 16, N. Y.

FOLD-A-FENCE can be angled, curved or inclined. Six-inch lengths snap together.

Fold-A-Fence Corp., Lake Grove, Ore.



HOME AND SHOP SHORTS



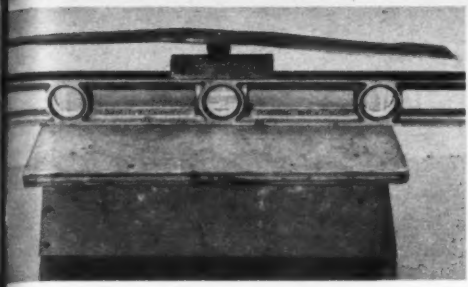
AVOID water-line freeze-ups by placing a solid disk between aerator and faucet to keep water circulation within the system.

OLD NEWSPAPERS are "musts" when working around the shop. Keep them handy on a towel rack secured to your workbench.

Send Freddie Fumbles your idea of a good short-cut, time-saver or safety device in your work, whether it be in the home, shop, office or farm. Each tip accepted will be paid for at the rate of $10. Naturally we cannot acknowledge or return the ones we cannot use. However all will be carefully read and evaluated. (Those which we can use in other departments of MI will be paid for at our regular rates.) Please send in your ideas on a postcard only. Address to Freddie Fumbles, *Mechanix Illustrated*, 67 W. 44th St., New York 36, N. Y.

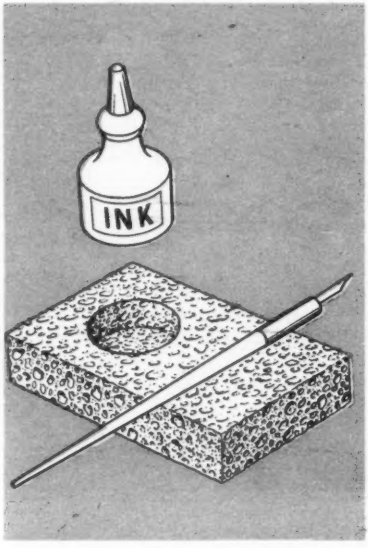
FREDDIE FUMBLES

WAIT'LL THE LITTLE WOMAN SEES THE PAINT JOB I DID WHILE SHE WAS AWAY!
YEP, SHE'LL REALLY GET AN EYEFUL..
WOW!
PAIN
HMMM..
THAT DIDN'T DO ME OR THE CAN ANY GOOD!

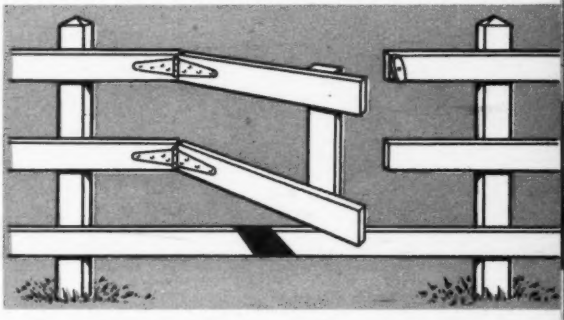


BALANCE a rotary lawn mower blade by setting the center hole over a large ball bearing held in a V-block resting on a carpenter's level; then grind back of heavier end to balance blade.

CAMPING OUT? Take along some metal spikes about ¼ in. x 8 in. long. Staked triangularly into the earth they'll hold a frying pan steady and level.



ABSORBENT ink stand made from soft plastic sponge doubles as a pen wiper.



MAKE A FENCE GATE by sawing fence as shown; complete with two wide hinges and a simple latch.

THANKS—I CAN REALLY USE THE CLOTH—HUH?
?
WELL—NOW WHEN I POUND THE TOP ON..
—I WON'T HAVE TO FLIP MY LID!!
THANKS: FRANK KRIEGER ★ FORT WORTH, TEX.

THIS IS HOW the Ural Mountains looked to Francis G. Powers, downed U-2 pilot. However, this is our model "flying" over a relief map* of this part of the U.S.S.R.

BUILD A MODEL OF THE U-2

By Paul Del Gatto

ONE of the most unusual—and most newsworthy—American planes designed in recent years is the Lockheed Aircraft Company's U-2. Its long, narrow wing is not common to other jet aircraft but typifies what would be seen in a highly efficient soaring glider.

Two years ago the first accurate three-view drawings of the U-2 were published and speculation arose at that time that these aircraft were possibly being used for extremely high-altitude reconnaissance missions behind the Iron Curtain. Recently this was substantiated when a U-2 plane and pilot were shot down over the Soviet Union.

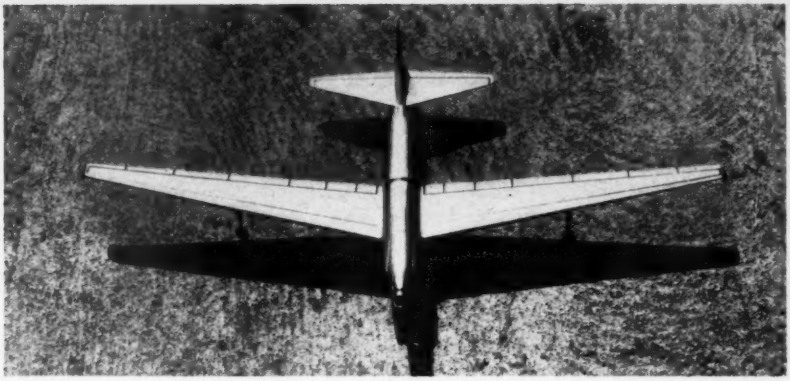
Designed to operate at altitudes over 70,000 feet, it was imperative that the U-2 be able to sustain stable flight characteristics in the rarified atmosphere of those heights.

With a few minor changes the U-2 makes an excellent subject for a model. We added more dihedral to provide greater directional and lateral stability. We also slightly increased the horizontal tail area and the distance between the wing and tail surfaces. These modifications were essential for the model to achieve realistic stable flights. Built to a quarter-inch to one-foot scale, the plane projects a wing span of over 20 inches.

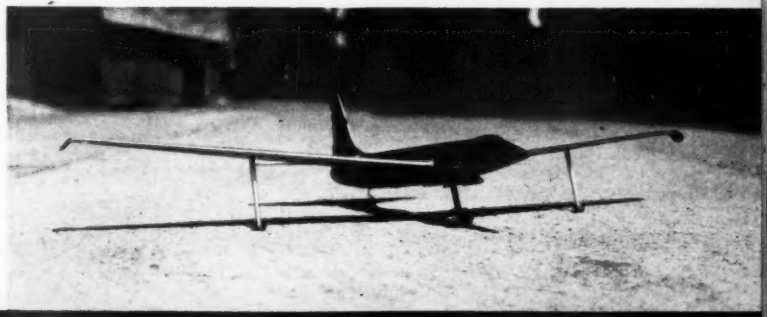
The cost of materials should be small since most of the model can be made from scrap pieces of balsa you probably have lying around your workshop.

Begin by cutting the wing and tail surfaces to the desired shape. Use the typical airfoil sections as a guide for ob-

*©1960 by Jeppesen & Co. Denver, Colorado, U.S.A.

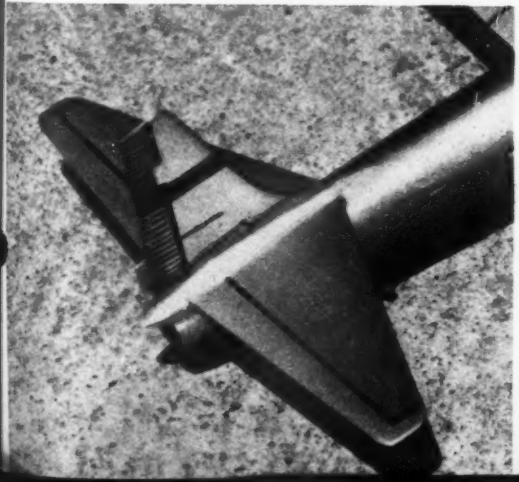


TOP AND SIDE VIEWS of the U-2 model illustrate its streamlined glider-type construction and high-aspect-ratio wing. Note plane's turned-down wing tips.

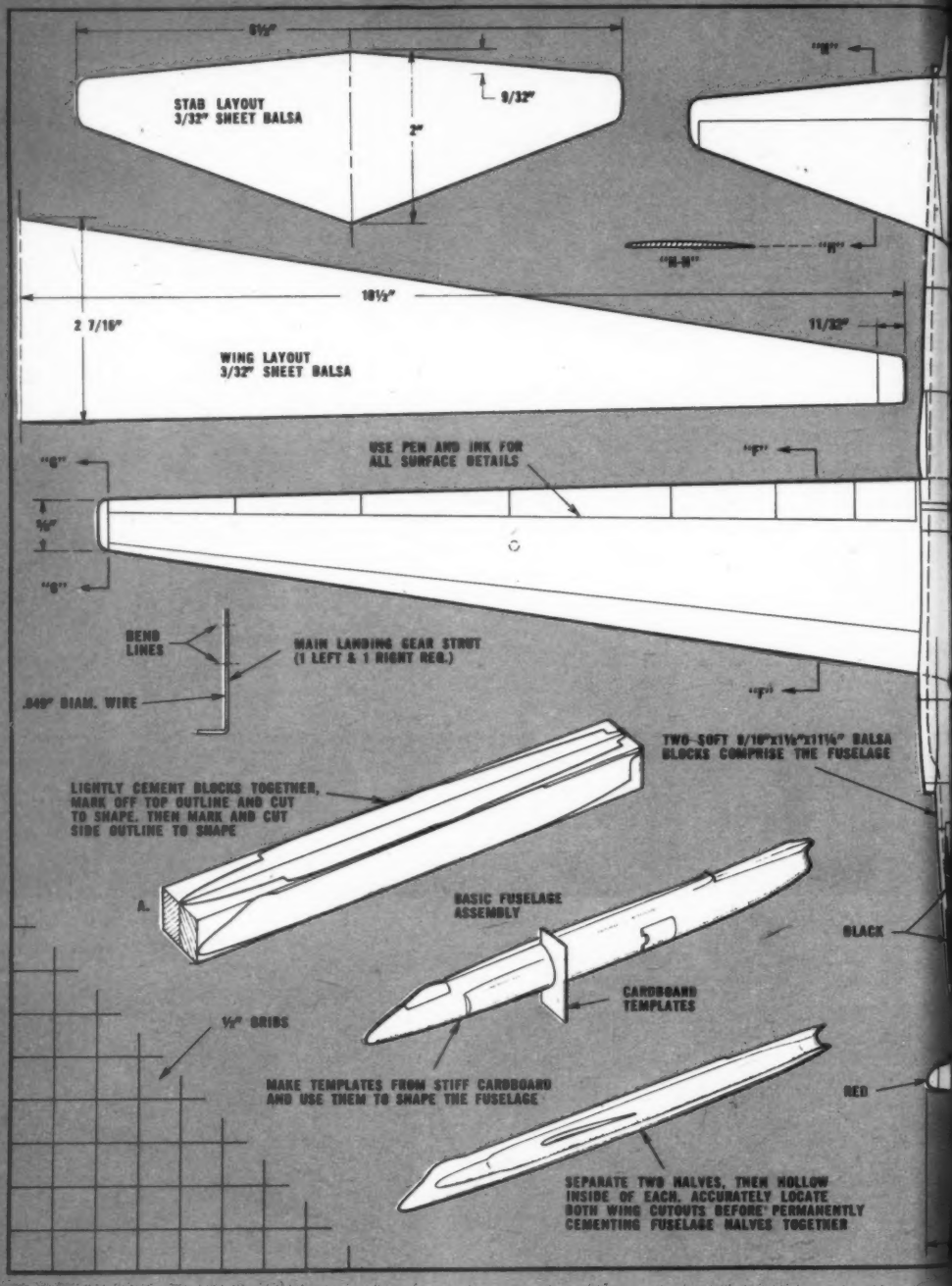


RECONNAISSANCE PLANE

CLOSEUP of tail assembly shows the design of the inked-on elevators and rudder.



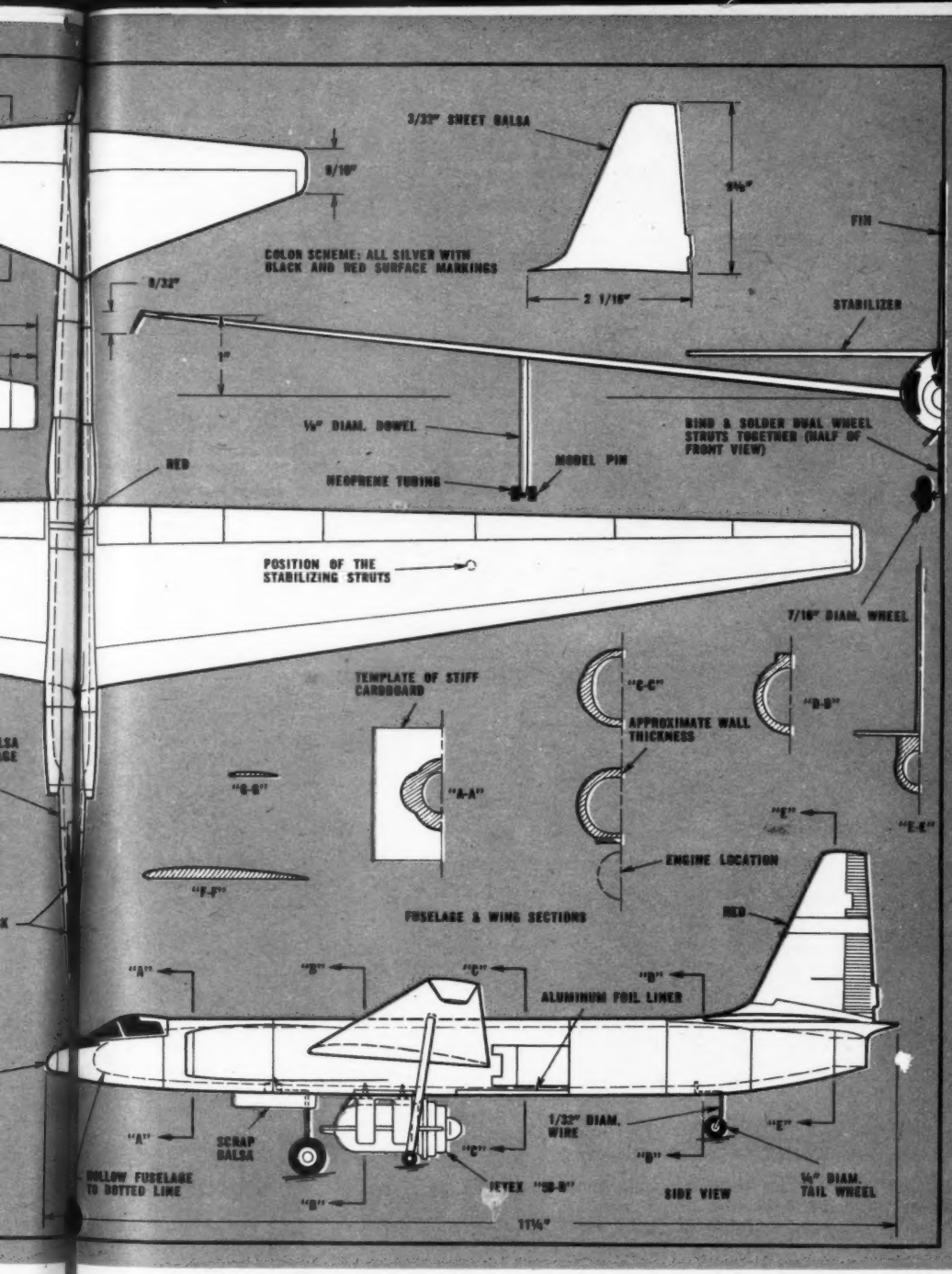
READY TO FLY, the model can be launched by hand, catapult or with a Jetex engine.



taining an efficient and desirable curvature of the wing surfaces.

When the complete flat wing has been made, shape it to the required dihedral angle. The tips are added when the wing is installed in the fuselage. The tail surfaces are shaped in the same manner as the wing.

The fuselage is formed by *lightly* cementing together two medium balsa



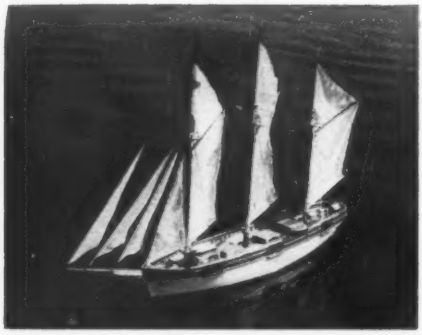
blocks. Then mark off the profile and top outlines. Use a modeler's knife, with cardboard templates of the fuselage, to form it to the dimensions shown in the drawings. [*Continued on page* 157]

U-2 KIT AVAILABLE

A complete kit for making this plane, including plans and Jetex 50-B engine, is available. Send $2 to AIDS, Box 31, Halesite, N. Y. Less engine, $1.50.

Golden Hammer Award Winners

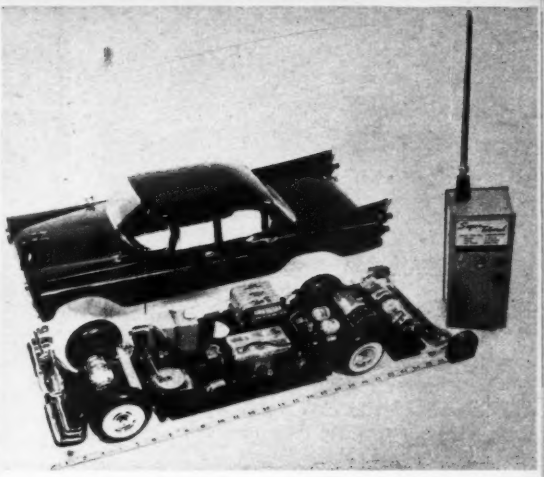
FOWLE BROTHERS, Newton Centre, Mass., have loads of fun driving this MI Kart built in their father's shop.



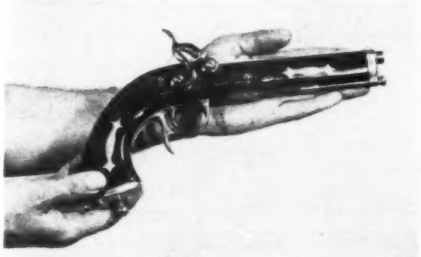
SAILING MODEL has working rigging and wheel-operated rudder, also drops anchor. Anton D. Brotsos, Chicago, Ill., built her.

STEAM ROLLER is work of Fred E. Wise, Gates Mills, Ohio. Gas-fired boiler from a pressing machine was converted to coal.

HOUSE, except for plastering and furnace work, was built in spare time of Douglas M. Stewart, a mailman from Portland, Ore.



RADIO-CONTROLLED model of 1958 Dodge Coronet is 26½ inches long. Vincent Venza of Nutley, N. J., scaled down his own car.



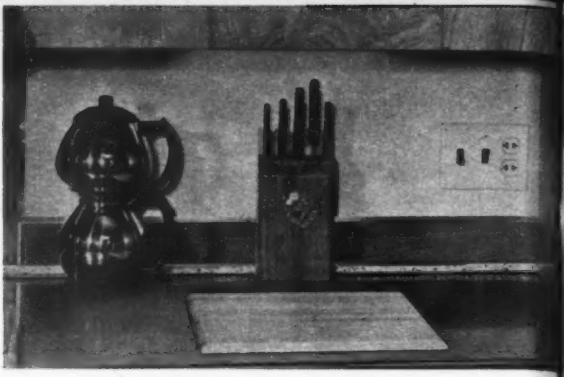
CAP-AND-BALL PISTOL exhibits craftsmanship of Rudolph D. Arthur, Rock Hill, S. C. Accurate weapon fires .36-caliber ball.

AIRPLANE built by T. W. Beal, Houston, Tex., cruises at 110 mph with 65-hp Continental engine. Approximate cost was $950.

Each craftsman whose project is shown receives a 24-karat gold-plated Hammer and a Workbench Award Certificate. Runners-up will be sent a beautiful gold-plated Golden Hammer Tie Bar or MI's Certificate of Merit. So send us some *black-and-white photos, with negatives,* and a full description of your latest project. Photos of your workshop are also eligible. Send all entries, with return postage, to MECHANIX ILLUSTRATED Golden Hammer Awards, 67 West 44th St., New York 36, N. Y. Entrants are advised that MECHANIX ILLUSTRATED cannot accept responsibility for customs charges, duties, taxes, etc., levied against Golden Hammer and Golden Hammer Tie Bar winners outside the United States.

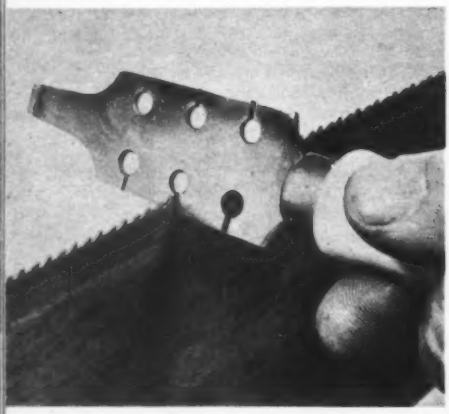
The following craftsmen have been awarded GOLDEN HAMMER TIE BARS for their projects: Tom Taylor, Green Lake, Wisc. . . James W. Burns, Wakefield, Mass. . . Joseph Pacific, Jr., Utica, N. Y. . . Dale Compton, Mullens, W. Va. . . Clifford Miller, Columbus, Miss. . . Lt. Robert C. Panuska, Kings Point, N. Y. . . James Walker, San Antonio, Tex. . . Harold R. Magre, Summit Hill, Pa. . . Galem Hedgecock, Modesto, Calif. . . Peter George Slawinski, Harvey, Ill. . . Norman A. Narraway, Parkstone, Poole, Dorset, Eng. . . Elmer L. Crampton, Madison Heights, Mich. . . Chuck Gronbach, Chino, Calif. . . Norman R. Corliss, Marlboro, Mass. . . A. R. Hearn, Mullens, W. Va. . . Leonard Litwiller, Kitchener, Ont., Can. . . Philip G. Collins, Catlettsburg, Ky. . . Lyn Mayle Collins, Catlettsburg, Ky. . . A. W. Nettrouer, Wichita, Kan. . . John W. [Continued on page 170]

MI's HARDWARE STORE



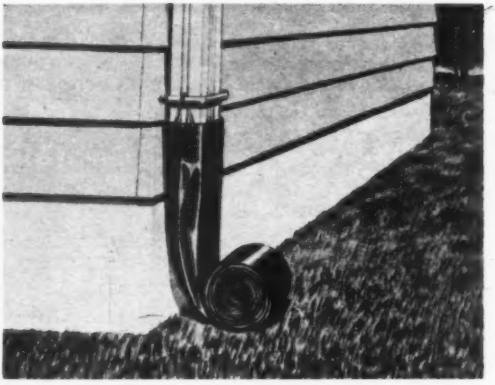
CHOP-N-BLOCK of rock maple can be installed in any counter; 5x5 in. to 14x14 in., $1.45 to $5.60.

Rock Maple Prod., Inc., Coopersville, Mich.



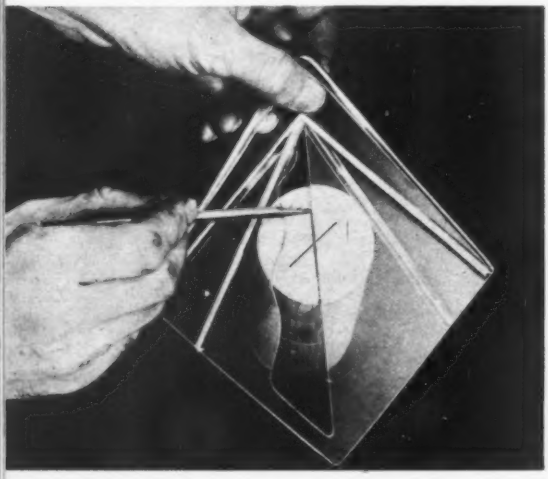
SAW SETTER tool sets teeth of rip and crosscut saws of any thickness.

Industrial Prod. Sales Co., 1182 Broadway, N. Y., N. Y.



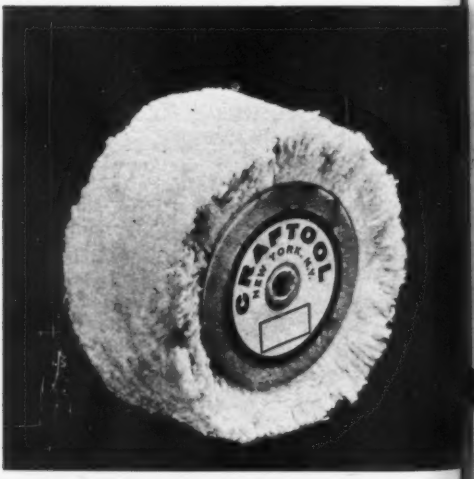
RAIN DRAIN ties to downspout, unrolls during rain to carry drain water away from foundation.

Rain Drain, Inc., Bangor, Wis.



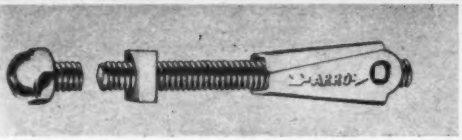
ZEROZERO center finder locates centers on round, square, hexagon, octagon stock. $1.95.

Athens Fabricating Co., 282 Southview, Athens 2, Ga.



POLY-MOP buffing wheel has extra-wide surface, fits tapered or straight spindle.

Craftools, Inc., 396 Broadway, N. Y., N. Y.

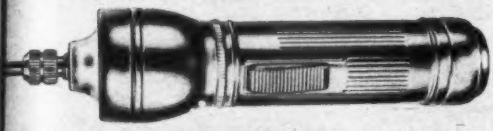


TWO-WING spring-type toggle bolt is made with round or flat heads; ⅛ to ½-in. dia.

Arro Expansion Bolt Co., Marion, Ohio.

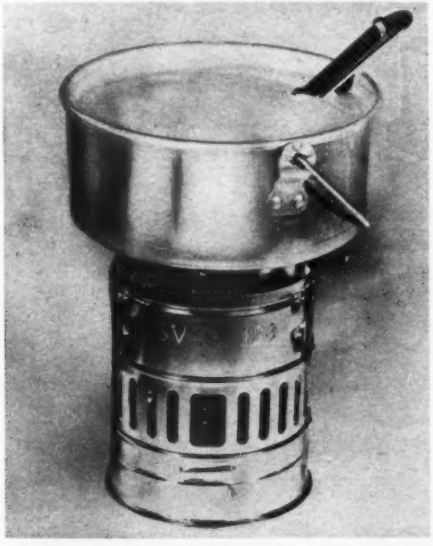
ROLL-A-PLANT supports and permits moving large potted plants up to 150 lbs. $3.98.

Crest Co., 26 Ave. "B," Newark, N. J.



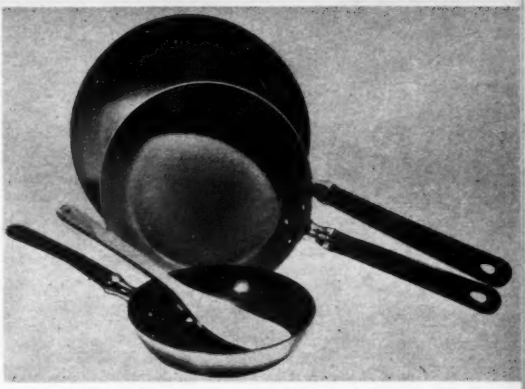
NOVEL NEW flashlight-screwdriver tool comes with four different blades. $2.49.

I. H. Mfg. Co., Inc., 121 Greene St., N. Y. 12, N. Y.



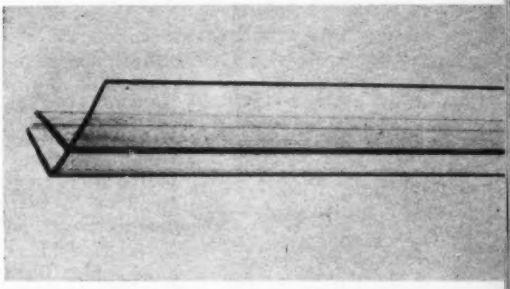
CAMP STOVE. 5 in. high by 3¾ in. dia., burns 45 min. on ⅓ pt. gasoline. $8.75.

Rexo-Therm/Sievert Sales, Inc. 986 Ogden Ave., Naperville, Ill.



SILICONE-LINED pans use almost no fat to fry or saute' any food. Set of three: $20.

Pampered Kitchens, Inc., 507 Fifth Ave., N. Y., N. Y.



SHELF GUARDS slip over medicine cabinet shelves and keep bottles from falling out.

Melort Industries, 20 Clinton Ave., Valley Stream, N. Y.

Elmer's Floor Grip, an apply-it-yourself adhesive that keeps throw rugs from slipping, will soon be put on the market by the Borden Chemical Co., 350 Madison Ave., N. Y. 17, N. Y. . . Photos showing the patterns available in beautiful, translucent Acrylite panels, and the uses to which this material can be put, are presented in a new free-on-request catalog by Wasco Prod., 5 Bay State Rd., Cambridge 38, Mass. . . Tone up and protect the finish on your Fiberglass boat by cleaning it with nonabrasive Permatex Plastic Cleaner, a product of G. M. Basford Co., 60 E. 42nd St., N. Y. 17, N. Y. . . Vest Pocket Guide To Better Welds, a revised edition of How To Get Better Welds, is available free from Hobart Bros. Co., Troy, Ohio. . . A weatherproof vinyl carpet for indoors and outdoors has been developed by U.S. Rubber Co., 1230 Sixth Ave., N. Y., N. Y.

GALLEY STOVE AND TABLE

Just the thing for day cruisers, this compact unit features a portable, free-standing table.

By Jack Provino

NOT wanting to encroach too much on cockpit space in my 19-foot day cruiser, and still wanting the advantage of hot meals and coffee, I designed and built this compact stove, table and storage unit which occupies less than two square feet of floor area. Its unique feature is the portable table. In most small boats, the table is hinged to the cockpit coaming with only three sides accessible, and people who want to sit down for a snack have to cluster around, knocking knees. The portable table can be set down anyplace in the cockpit and even carried ashore.

The entire unit is built of ¾-inch exterior fir plywood assembled with waterproof glue and covered with mahogany-grained Formica. The Formica is bonded to the wood by coating both surfaces with Contact Cement and pressing them together. No clamping is necessary. Another idea would be to eliminate the Formica and use mahogany plywood with a varnish finish.

Hardware for the unit includes a chrome-plated [*Continued on page* 142]

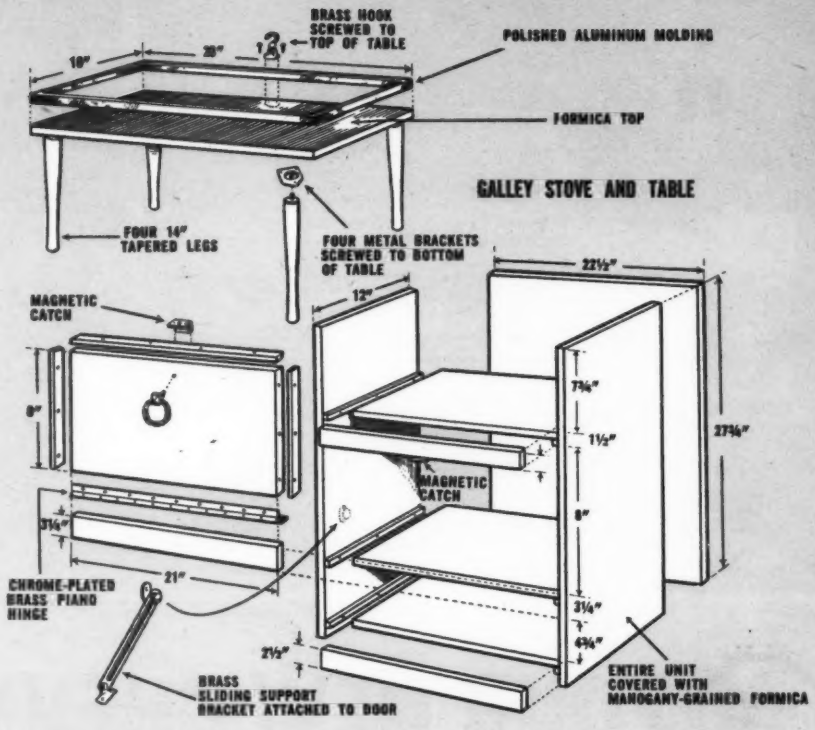
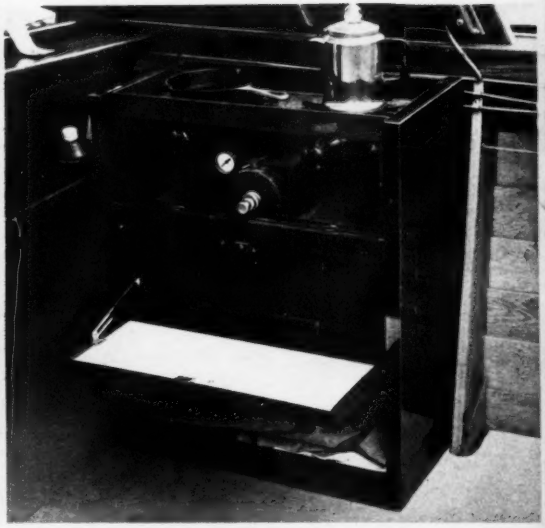

BRASS HOOK SCREWED TO TOP OF TABLE
POLISHED ALUMINUM MOLDING
FORMICA TOP
GALLEY STOVE AND TABLE
FOUR 14" TAPERED LEGS
FOUR METAL BRACKETS SCREWED TO BOTTOM OF TABLE
MAGNETIC CATCH
CHROME-PLATED BRASS PIANO HINGE
BRASS SLIDING SUPPORT BRACKET ATTACHED TO DOOR
ENTIRE UNIT COVERED WITH MAHOGANY-GRAINED FORMICA
MAGNETIC CATCH

TABLE TOP is usable even when secured as a cover for two-burner alcohol stove.



THE STOVE in use. Below, door of utensil storage compartment serves as a shelf.

CAR CARE

YOUR NEW CHEVY

By Frederick C. Russell
Society of Automotive Engineers

MANY THINGS account for the 1960 Chevrolet's popularity, not the least of which is its high degree of mechanical dependability requiring few repairs. However, to play it safe the smart Chevy owner will follow the service rules. There *is* such a thing as a car operating so well that its owner is inclined to overlook certain important maintenance needs.

The oil filler pipe for the Chevy Six engine is in an especially handy area well back on the driver's side, and there's nothing vulnerable around it to be damaged by spilled oil.

Complete instructions for jacking the car are affixed to the underside of the luggage compartment lid.

Unlike some cars with automatic transmissions, the Chevy can be started by pushing or coasting.

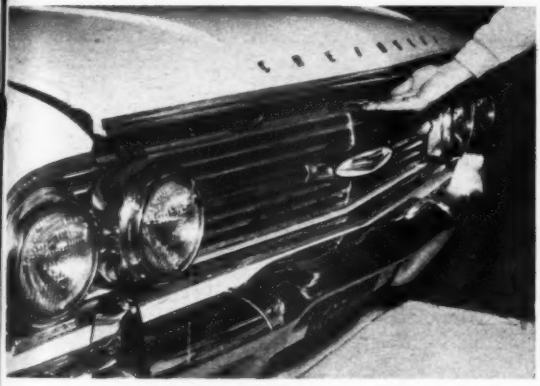
On the debit side there is the vulnerable piping for carrying the automatic transmission's oil to the cooler in the bottom of the engine radiator. A stone tossed up from the road could damage one of these two lines. Then there is the anti-sway mechanism on the larger models which is so close to the shock absorbers that it may cause noise when the car enters a driveway across a deep gutter. The remedy for this is to bend the bar to provide added clearance.

Chevrolet has announced that the heavy-duty front-wheel bearings, which have been available for use on their '58, '59 and '60 taxicab models, can also be used on Chevrolet passenger cars of these

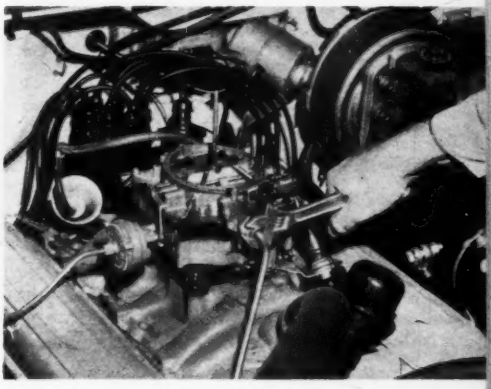
same years and models. The change is advisable in view of the trouble experienced by some owners with the standard wheel bearings. In making the change the entire bearing unit must be replaced, including the inner bearing assembly, the outer assembly and the inner seal felt.

Some of the service features about the '60 Chevy are refreshingly different. Typical is the inlet-type of fuel filter for the various Rochester and Carter carburetors. This filter is located at the carburetor's fuel inlet and is uncovered by removing the filter nut with a one-inch box wrench. The element is cleaned by dunking it in solvent, then drying it with compressed air. In replacing this element make sure the small section of the cone faces the inlet fuel filter nut. Replace the filter every 15,000 miles.

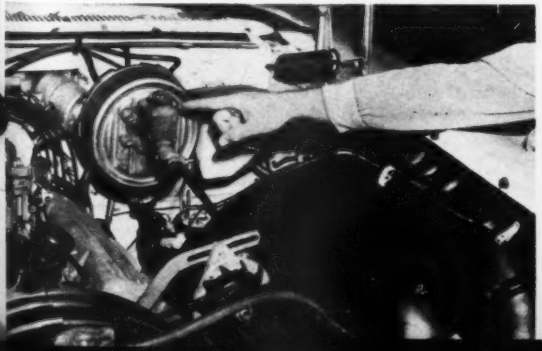
In considering engine oil we find ourselves smack in the middle of a hot controversy between the oil men and the car men. While Chevy continues to advocate the idea of getting full value from modern oil, it *does* recommend oil changes as often as every 1,000 miles where there's a lot of stop-and-go driving, especially in cold weather. However, the oil refiners arbitrarily urge oil changes every 30 days in winter and every 60 days in summer, but every 2,000 miles in any case. Still, the point is that it's a lot cheaper in the long run to change oil fairly often rather than wait until the last possible moment—when it *may* be too late!—and then discover to your dismay that your oil "economy" has resulted in the need for



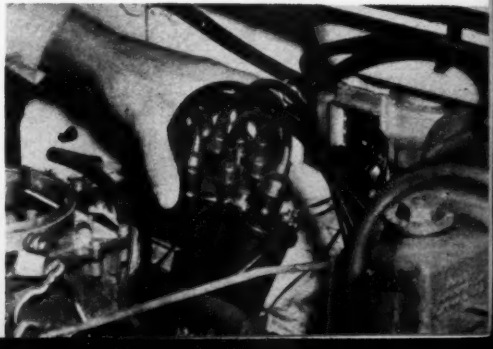
A FLICK of the wrist trips the hood lock release lever located at center of grille.



REPLACE inlet fuel filter every 15,000 miles, or when carburetor starts flooding.



CHEVY'S power brake will still provide a power-assisted stop after engine stalls.



REMOVE distributor cap to replace distributor cam lubricator after 25,000 miles.

WHEN CRANKING in cold weather, hold accelerator halfway down to the floorboard.

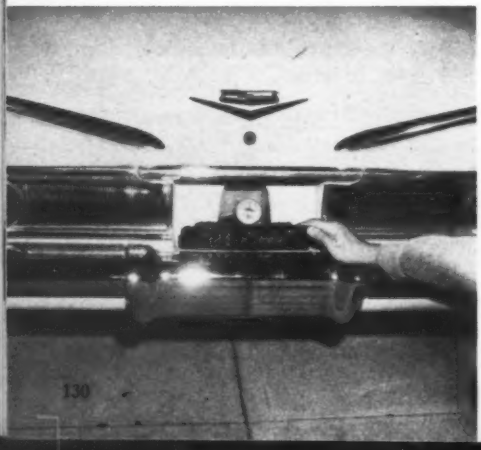
EVEN A TALL TEXAN wearing a Stetson will find ample headroom in the new Chevy.

some costly repairs on the car's engine.

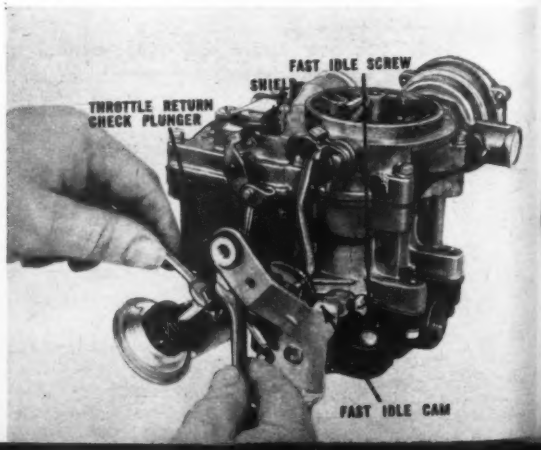
Chevy shops use an air cleaner tester which tells the operator whether the paper air cleaner element used on the two- and four-barrel carburetors should be cleaned or replaced. Before testing, the mechanic will make sure there are no holes or breaks in the element; if there are, immediate replacement is required.

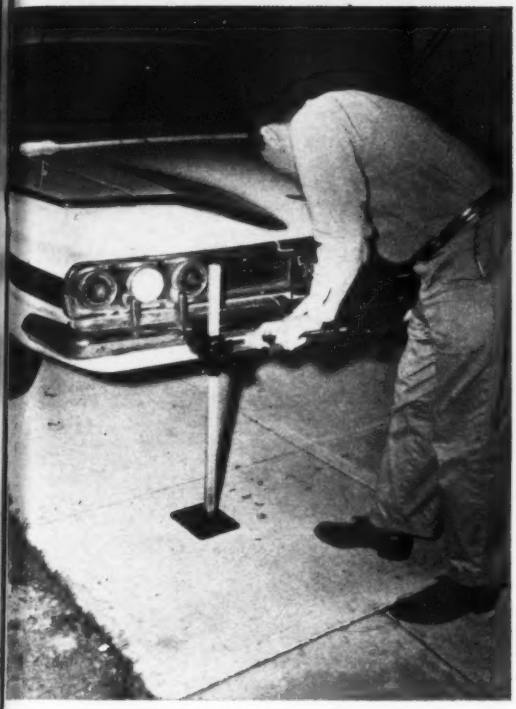
On the six-cylinder engine the standard cleaner is the oil-wetted type, an oil-bath cleaner being optional. Cleaning the former [*Continued on page* 156]

LOWERING the rear license plate bracket exposes fill pipe with its vented gas cap.



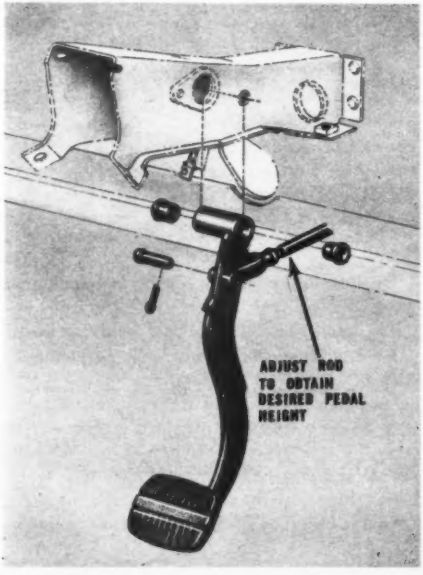
ADJUST the carburetor throttle return to regulate your Chevy engine's idling speed.





USE BUMPER JACK to raise either end of car; be sure brakes are on before jacking.

DRAWING shows how the power brake push rod is attached to brake pedal attachment.



SERVICE TIPS

from Detroit

Blinking headlights on a 1960 Ford or Falcon may be due to a defective circuit breaker. The breaker should trip open within one hour at 125 per cent overload, and within 30 seconds at 200 per cent overload. If blinking persists, replace the headlight switch.

Noise from the oil relief valve or hydraulic system of a 1960 Plymouth may be felt and heard through the engine oil pan; such noise may be silenced by replacing the filter element. Unscrew the retaining nut on the oil pressure relief valve or temporarily remove the spring for trial purposes. Use only Mo-Par filter element (Part No. 1851658) for replacement.

The correct spark plug type for the 1960 Chrysler C-300F is A-32. Do *not* use a spark plug of higher heat range.

When servicing carburetor air cleaners, don't overtighten the retaining clamp during reinstallation of the cleaner. Even a slightly bent carburetor air horn can create a space allowing large quantities of dust and dirt to enter the engine through the manifold.

Brake howl heard at low speeds on 1960 Dodges may be corrected by installing rear spring insulators P/N 1731797 (upper) and P/N 1731798 (lower).

A heavy-duty clutch-driven disk is used with Corvair's Turbo-Air Special engine. The clutch facing is a woven type asbestos material which increases clutch holding power 25 per cent.

The AG-42 spark plug originally released for the production of the 170 cu. in. six-cylinder Valiant engine has been replaced by the AG-52 plug. The new plug has a higher heat range, greater preignition safety factor and is less susceptible to fouling.

New Ideas in Photography

Kodak Sound 8 Projector comes complete in built-in case with *f*/1.6 lens, speaker, microphone, and phono

Now you can add quality sound

Magnetic head of "Alfenol" alloy is almost wearproof, assures realism

Now you can get top-quality 8mm magnetic sound at half the cost of fine 16mm magnetic sound, thanks to a major advance in metallurgy.

The Navy has developed a new alloy called Alfenol: *Al* for aluminum, *fe* for iron, *nol* for Naval Ordnance Laboratory. Used in the new Kodak Sound 8 Projector, it provides fidelity rarely surpassed even in 16mm sound movies.

Gives long service

Alfenol is amazingly durable. While other recording heads need to be replaced after a few hours, the Alfenol head records for thousands of hours without any loss in sound quality.

The Kodak Sound 8 Projector makes it easy to add commentary, music, and sound effects to all your 8mm movies—old or new. Just ask your photo dealer to have Kodak Sonotrack Coating added to the edge of your edited film.

Comes with microphone

Then project your striped film at 16 or 24 frames, and record your commentary by speaking into the microphone that comes with the projector.

To add music or sound effects, connect your record player or tape recorder, using the phono connector cord. You can record, play back, and re-record until you are satisfied—as you would with a tape recorder.

When you hear the final playback, you'll be delighted with the clear, balanced tones produced by the built-in 10″ x 2″ oval speaker.

Judge the sound and picture quality of the

from Kodak

Picture it now—see it again and again

connector cord. $345.

to 8mm movies!

Kodak Sound 8 Projector for yourself. $345 list, or as little as $34.50 down.

Budget Movie Projector Automatically Threads Film Right Onto Take-up Reel

Easiest low-cost way to show movies. Just feed the film into a slot and the show is on! Brownie 8 Movie Projector (Model A15) shows bright, sharp 8mm movies up to 4 feet wide. 200-foot reel capacity. $54.50.

Automatic Cameras' Tiny Power Plants Made of Selenium, Cadmium, Gold

Imagine subminiature power plants that use light as fuel! They are the keys to picture-perfect results with Kodak's new electric-eye cameras.

The power plants are photocells. Each is composed of a thin steel plate coated with layers of selenium, cadmium, and gold or platinum. The last layer is about one molecule thin, and is covered with lacquer to seal out moisture.

Light falling on the cell is converted directly into an electric current. The current is so small, it is measured in millionths of an ampere. Yet it can move the carefully balanced meter mechanism of any Kodak automatic camera (above).

1) Brownie Starmatic Camera, $29.95; 2) Kodak Automatic 35 Camera, $89.50; 3) Brownie Automatic Movie Camera, *f*/2.3, $77.50; 4) Kodak Cine Automatic Turret Camera, *f*/1.9, $124.50.

The position of this mechanism determines your lens opening. In still cameras, the lens "squints" in sun, opens in shade when you press the shutter release. In movie cameras, the lens opening adjusts continuously.

These ultra-modern automatic cameras by Kodak make picture-taking easier and surer than ever before. See them at your dealer's.

Prices are list, include Federal Tax, and are subject to change without notice.

Kodak
TRADEMARK

EASTMAN KODAK COMPANY, Rochester 4, N. Y.

See Kodak's "Ed Sullivan Show" and "Adventures of the Nelson Family"

[*Continued from page* 111]

rear brake rod by means of ⅛-inch steel cables. Turnbuckles provide for fine brake adjustments.

The cost of building this two-seater is a somewhat variable factor. Expenses can be whittled down by eliminating the starter-generator system for a saving of $77. In addition you would save on the cost of the battery. But you are advised against cutting corners in construction details. The sizes and dimensions of the parts are designed to produce a structurally sound machine. You can make it stronger but *don't* make it weaker.

Construction begins with the body which is made of ¾-inch exterior grade (A-A) U. S. plywood. Cut the side panels with a saber saw. Hand tools such as a spoke shave and block plane are used to smooth the curved portions. Waterproof glue is used exclusively to connect all framing sections. Countersink all flathead screws below the surface. The open bottom box for the seat section is rather basic. The curved front section will require a bit of care.

The set of four ribs notched for cross ties are set into dadoed upper and lower frame sections. The nosing is carved from a piece of 2x4 lumber. The circular saw is quite useful in whittling this piece close to the curved cross-section required to follow a counter of the side panels. Run a series of grooves to correspond to the depth of the cross-section, then plane off the protrusions.

To follow the outside curve a piece of ⅛-inch plywood is glued in place over the ribs. Although this was a tough curve it worked out very well without necessity of using screws. Use plenty of clamps, applied gradually, as the wood is bent slowly around the curve. Use glue on both surfaces so the piece will stay put. Screws could not be used because ⅛-inch plywood is too thin to permit countersinking heads. Nevertheless, a good glue will suffice.

The seat section is made up of ¾-inch pine. This is screwed to the body, to permit access to the "mechanical" area below. The inner curved section of floorboard is not covered until the components such as tiller, gas, brake pedals, signal lights and headlamp wiring as well as head lamp connections are made.

The chassis, as distinguished from the plywood body, is the metal section which consists of 2x2-inch angle iron attached at front and rear. The quarter-inch steel plate used for support of the engine and transmission is slung below the chassis to gain clearance for the engine under the seat. The plates are bolted to the iron angle. However, if you prefer you can weld them together. If you decide to use bolts, be sure to employ lock washers.

The cross members of the chassis are temporarily bolted in place. Later when the engine is in place and checked for alignment and fit, then it is advisable to weld the intersections to prevent diagonal shift.

The leaf springs used for this car are not commercially available since they have been especially designed for this particular auto. It would be indeed rare to find proper size springs at a junkie's yard. So, you have two choices: Make up your own, as we did, or have a spring shop make up a set to order. Prices will vary for a custom job, averaging about $35. Homemade they will run about $12 for the metal and 12¢ a pound for heat treating at your local auto spring shop.

Follow this procedure: Purchase floor annealed spring steel cut to length as shown in the drawing. To form the springs to shape, lay out a full size sketch to be used as a guide when bending. If your electric welder has a carbon arc attachment the task is simplified. Chalk-mark the steel where the bend is desired and heat this area to shape. The turned up front end of the main leaf is formed by forging around a ¾-inch steel rod. Check pieces for fit, then proceed to drill the necessary mounting holes as indicated.

Although not yet heat treated, spring steel is somewhat tougher than ordinary steel, due to air hardening, so use high-speed drills. Now you can visit your local spring or heat treating shop to have the springs tempered. Again, be sure to drill all holes *before* the tempering operation.

The front end requires care in assem-

[*Continued on page* 136]

There's a Weldwood Adhesive for just about every gluing job

QUICK, CLEAN Presto-Set® Glue, the all-purpose glue, bonds paper, wood, cloth, china. Dries fast, won't stain. Handy new bellows-action squeeze bottles with spreader tops. From 39¢.

EASY-TO-USE Weldwood Contact Cement bonds leather, wood, plastic instantly, permanently, on contact. Needs no clamping; water-resistant, stays flexible when set. From 29¢.

STRONGEST of them all is Weldwood Plastic Resin Glue. Nothing like it for heavy-duty jobs. Makes joints even stronger than the wood itself. Mixes instantly, is water-resistant. From 40¢.

WATERPROOF and best for lawn furniture, boats, Weldwood Waterproof Resorcinol Glue makes a powerful bond on most porous materials. Resists rot, fungus, heat, cold. From $1.15.

Each Weldwood® Adhesive has an important place in every home. In your kitchen, workshop, garage, family activities room, wherever repairs or projects go on in your house, one or more of these Weldwood work savers belong—there when you need it. Your hardware, lumber, and paint dealers stock all four—pick up your supply soon.

WELDWOOD
ADHESIVES

Charles R. Smith, Sr., of Cabin John, Maryland, owns this model 11A 1925 Touring Car, one of the finest Franklins made

"I keep my classic Franklin in perfect condition with Quaker State, and my new car, too!" This Franklin, with the only air-cooled engine of its day, required a motor oil with unheard of (for those days) stamina and heat resistance. Only one oil—Quaker State—met the test, and the manufacturer *specified* it. Today—35 years later—this car is still in excellent running condition. And Quaker State is still best for protection, and endurance. Refined from 100% pure Pennsylvania Grade Crude Oil. There is no finer motor oil.

Available most everywhere . . . always ask for Quaker State by name.

For the name of your nearest dealer, call Western Union by number and ask for Operator 25.

QUAKER STATE OIL REFINING CORP., OIL CITY, PA.
Member Pennsylvania Grade Crude Oil Association

Build 1901 Oldsmobile

[*Continued from page* 134]

bling, especially when welding the yokes. If available, use a bar clamp to hold the yoke in place and tack weld. Remove clamps and check alignment of kingpins. If okay, complete the weld and don't spare the rod.

The steering arm and spindle are welded directly to the knuckle as shown in the drawings. The spring seat plates are also welded at this time. If you are not equipped to do the welding, farm the job out to a local metal working shop. If you do have the work done outside, it will be wise to clamp all the components in place to insure accuracy.

The steering mechanism consists of the tiller bar, connecting yoke, tiller spring and tie rod. This spring is elliptic in shape and is fashioned from $\frac{3}{16}$-inch spring steel. The same procedure is followed as with making leaf springs. The tiller spring serves to absorb most road shocks.

Rear axle construction is clearly shown in the drawings. The flanges that connect to the brake and sprocket housing should be of the heavy duty type. Since various size flanges are available, it would be wise to purchase the brakes first. Then choose the set of flanges that are most suitable. If you wish, you can make the flanges using half-inch steel plate turned and threaded to fit the axle housing. Be sure to weld the flange to the housing axle. Grease fittings are placed in both rear axles, rear free wheel hub, front wheels and knuckles, and in the steering rod housing.

The shifting linkage is made up of steel bars pivoted to transmit the reciprocating motion of the hand lever into the arcing motion on the transmission shift rod. The shift rod makes an arc of approximately 90° from reverse to high, with neutral and low positions in between. You can vary the amount of the shift lever movement to suit your taste by repositioning the pivot points on the linkage.

The ten-inch pulley and small sprocket will require some slight modifications to adapt them to the transmission. The input and output shafts have square ends and the pulley and sprocket have round holes. To make them fit, we filed square holes in

[*Continued on page* 138]

Paint blister problem 90% solved with new Du Pont LUCITE® house paint

Resists paint peeling and blistering. Moisture blistering, once the homeowner's most serious problem, has been solved. Research proves new "Lucite" Acrylic House Paint, used with Du Pont Blister-Resistant Primer over bare wood surfaces, effectively resists blistering, cracking and peeling in 90% of the cases tested. And new "Lucite" is equally good for masonry.

Outlasts ordinary paints. Tests also prove "Lucite", applied according to directions, can keep your home beautiful 50% longer than ordinary house paint. Consider today's painting costs and you'll see how it can save hundreds of dollars. Yet "Lucite" costs so little more!

Serves as "Lucite" protective shield. New "Lucite" is the only house paint made from "Lucite" acrylic resin. Because its surface is extra-hard, heavy rains wash dirt right off. The tough acrylic resins in the finish help resist rain, snow, baking sun, sea air, fumes, mildew and smog. READY NOW . . . in whitest white and 16 fade-proof colors.

Send for booklet, "How to Get Extra Years of Beauty from Your Next House Paint Job." Du Pont Finishes Div., Dept. MI-69, Wilmington 98, Del. Or ask your Du Pont Paint Dealer. He's in the Yellow Pages.

Buy the paint that's worth the work...the beauty lasts

DU PONT

REG. U. S. PAT. OFF.

Better Things for Better Living

...through Chemistry

[*Continued from page* 136]

each. A 39-inch A belt is used from clutch to the pulley.

Ignition wiring and lighting is illustrated in drawings. A 12-volt battery is used with a 12-volt Delco starter-generator unit. The Exide No. 2SM battery which measures 6¾x10x8 inches fits nicely in the nook provided under the seat. The chassis is used as a ground return and the hot wire goes to the power source.

Starter control is by push button on the dash. This is wired to a heavy duty solenoid switch, as the push button would be much too light for the starting load. A voltage regulator controls the starter-generator circuit.

The lighting system on this car is a real conversation piece. Attractively styled brass coach lanterns contain sealed beam headlamps. The rear lanterns combine driving, stop and signal lights in each unit.

The headlamps are the sealed beam lamps from a pair of Eveready hand lanterns (clear fog lamps may also be used). A gum plywood cage is built to house the lamps. The headlamps are held together with ⅛-inch threaded pipe (⅜-inch O.D.) capped at each end with brass finials. The brass pieces butt each other and the cage to form a complete unit. The rear lanterns, of tapered design and slightly smaller than the front, contain one double filament bulb and socket in addition to a single filament bulb and socket. A simple bracket fashioned of sheet metal holds the two sockets in position. The six-volt headlamps are hooked up in series.

A toggle switch in the line controls the lights. A three-position on-off-on toggle operates the signals. In those states where a license plate light is necessary, use a clip-on type wired into the lighting circuit.

The convertible canopy is rather novel in its simplicity. Hoops are made of thin-wall electrical conduit which is bent with an electrician's hickey. Hammered flat on the ends, holes are drilled for bolts. Two of the hoops measure 36¼-inches high while the rear one is 39-inches. All three are 35½-inches across. The bend is of four-inch radius. These hoops pivot from brackets on each side of the seat. Hold-fast brackets are cut from $\frac{3}{16}$x¾-inch stock and drilled to accept ¼x20 bolts. A light canvas cloth obtained at a dry goods counter is sewn up with sleeves which slide over the tubing. The roll-up flap is made to stay in the up or down position by means of Dot fasteners. A celluloid insert in the oval window is optional.

The fir plywood is given a coat of white Firzite to tame the wild grain, followed by an undercoat and finally two coats of Chinese red enamel. Sand lightly between coats. Masking tape is used for striping. The metal work is finished in black enamel.

The big day is here. Fill up the tank and test run the works. If all seems in order you can make a trial run—but keep off public roads until you get proper licensing for the rig. The procedure may vary slightly from state to state so check your requirements. Here's the procedure in relatively strict New York. Assemble all your receipts to prove ownership, get a certificate of insurance and bring everything down to the license issuing office. Some states may require a physical inspection of the vehicle.

MAJOR PARTS LIST

Mechanix Illustrated magazine has made arrangements with the Finecraft Products Company, 189 Griffith Street, Jersey City 7, N. J., to supply readers with the following parts at the prices shown (a brochure is available):

Mercury Centrifugal Clutch	$10.00
Sprocket wheels, 12 and 36 tooth	11.50
10-inch pulley	2.50
No. 40 roller chain	10.00
Internal expanding Hawk brakes, six-inch	3.00 (set of two)
Schwinn wheels, 26-inch with tires and tubes	80.00 (set of four)
Brass hub caps	3.00 (set of four)
Bushings and bearings	6.00
Brass lamp parts	15.00

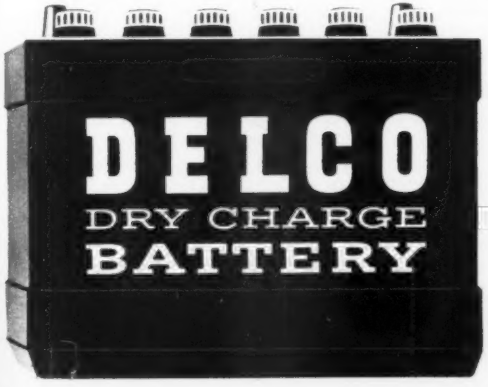
IN ADDITION YOU WILL NEED:

Clinton 4 hp B 1290 Engine Clinton Machine Company, Inc., Maquoketa, Iowa	$165.00
Cushman Transmission No. 0802 Cushman Motors, Lincoln 1, Nebraska	59.00
Exide 25M 12-volt battery The Electric Storage Battery Company P. O. Box 6266, Cleveland 1, Ohio	31.95
Mercury Centrifugal Clutch, No. GW 12-30 Division of Automatic Steel Products 1201 Camden Avenue S. W., Canton 6, Ohio	10.00

100% FRESH STARTS

There's just no substitute for a fast start when the occasion calls for it. (Ask any car owner!) And you *get* fast starts from a Delco Dry Charge battery—because a Delco DC is 100% FRESH. It's not activated until you buy it—so you get all the power you pay for. Better yet, you can count on a long life of dependable starts from this battery because it's specifically designed to handle the increased electrical needs of today's high compression engines.

Don't take a chance—ask your regular serviceman for a Delco DC-12, the battery built by Delco-Remy, world-famous manufacturer of a complete line of automotive electrical equipment.



DELCO BATTERIES ARE
ANOTHER RELIABLE
GENERAL MOTORS PRODUCT
... DISTRIBUTED NATIONALLY
THROUGH GM U-M-S

BE ON TV...
ask your DELCO dealer about the exciting Hollywood TV contest

SERVICE
FOR YOUR B&D TOOLS

Check the Yellow Pages under "Tools-Electric" for the location of the nearest Black & Decker factory service branch or authorized service station.

Free tool inspection when requested • Genuine B&D parts used • Factory-trained technicians • Standard B&D Guarantee at completion of recommended repairs • Fast service, reasonable cost, always.

Or write for address of nearest of the more than 50 branches and service stations to: THE BLACK & DECKER MFG. CO., Dept. 8109-S, Towson 4, Md.

50th ... Black & Decker

Quality Tool Service

The Finest craftsmen use the Finest Fasteners!

Buy SOUTHERN SCREWS for Best Results every time. . . . Save Time and Money too!

For every home project and repair, be sure you have the right size Southern Screw to do the job. Have 'em at the right time, too, rather than having to wait overnight or over a weekend until your supplier's store opens. Stock up now! Put a box of each of the popular sizes of Southern Screws on your workshop shelf today! Save time—and you'll save money, too, when you buy Southern Screws by the box instead of by the dab!

Remember: Only a SCREW Holds Like a Screw!

Wood Screws • Stove Bolts • Machine Screws • Machine Screw Nuts • Tapping Screws • Carriage Bolts • Drive Screws

SOLD THROUGH LEADING HARDWARE AND BUILDING SUPPLY DEALERS

THE U.S.A. DIGS IN

AMERICA is all set, when and if another war breaks out in the Pacific. At this writing, work is nearing completion on a gigantic underground fortress called The Hole, hundreds of feet beneath the surface of a pineapple field in Hawaii, the 50th State. Much of the multi-million dollar project is classified—but this much can be revealed without giving any comfort to a potential enemy:

Back in the early '40s, after Japan blasted Pearl Harbor, we spent 25 million dollars to construct a subterranean aircraft factory off Kunia Road and Farrington Highway on Oahu Island. World War II ended before it was ever used. The secret entrances to the vast cavern were sealed and it remained idle until 1958.

Then, two years ago, the Navy took a renewed interest in The Hole and feverish construction work has gone on ever since. Additional millions have been spent to make it the most invulnerable and complex underground bunker in the world.

All that Admiral Harry D. Felt's Pacific Command Headquarters would say was this: "There is an underground command center at Kunia designed to house the facilities needed to direct operations throughout the Pacific area under emergency conditions."

It has been learned, however, that military leaders of the Army, Navy, Marines and Air Force, are prepared to take shelter in The Hole in case of an atomic attack.

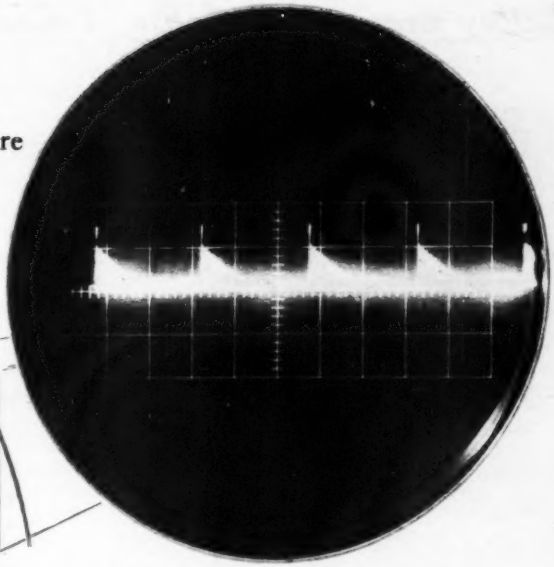
Living quarters for hundreds of men are now completed; miles of tunnels, roads and tram-car lines have been built; wells have been drilled for water and huge fuel storage tanks installed. Electricity and air conditioning are provided by Diesel generators and enough food has been stored to sustain the garrison for months.

The underground fortress now consists of three levels, covering several acres, and more are being dug still deeper into the earth. Each floor is connected by elevators, and the entire complex is thoroughly protected against atomic fall-out, chemical or bacteriological warfare. A complex array of electronic devices, radio transmitters, television and radar equipment will keep the defenders in touch with the upper world.

Here, safe in the Kunia facility, America's military brains will press the buttons and give the commands that may mean the difference between our destruction or survival.

—Ivan Cameron

"Phase detector of the Moving Target Indicator receiver misaligned on the FPS-3... realignment procedure must be followed."



YOU MAY HANDLE A SITUATION LIKE THIS...

If you measure up to the Aerospace Team

This man is on a team. And the situation facing the team is a moving target. Mission? Intercept same. This man is an expert. He was given thorough training in his specialty. Now he is a skilled technical specialist with an assured future. He is a man who measured up to the requirements of the Aerospace Team ...a man you can depend on.

Are you that man? If you have what it takes, an exciting and interesting career may lie before you. You will be eligible for valuable training for a key job in the rapidly unfolding age of air and space travel. Also, there will be the opportunity to further your formal education, perhaps even win a college degree—with the Air Force paying a substantial part of your tuition costs.

If you are interested in a career of steady advancement, solid security... a career where you will handle situations of increasing responsibilities, we of the Air Force would like to talk to you. Just clip and mail this coupon.

U.S. AIR FORCE

There's a place for tomorrow's leaders on the Aerospace Team

PASTE COUPON ON POSTCARD AND MAIL TO:
Airman Information, Dept. MO9, Box 7608, Washington 4, D.C.

Please send me more information on my opportunities in the U.S. Air Force. I am between the ages of 17-27 and reside in the U.S.A. or possessions.

Name_____

Address_____

City_____ **Zone**_____ **County**_____ **State**_____

Galley Stove And Table

[*Continued from page* 126]

PORTABLE table is used forward of stern seat, also can be taken ashore for picnics.

brass piano hinge for the door of the storage compartment, a brass sliding support bracket which holds the door in a horizontal position for use as a shelf, a magnetic catch to keep the door closed and a pull-type handle which is installed on the face.

The table is equipped with four 14-inch tapered legs of the type used in construction of cocktail tables. These legs are screwed into brackets which are attached to the underside of the top. A polished aluminum molding finishes off the edge of the table top.

When in place on top of the unit, the table is held by a brass hook and eye which keeps it from being jarred loose during rough going. When the table is removed, the burners are exposed for use and the entire stove housing can be lifted out easily for cleaning. The hardware on top of the table can be eliminated by placing hooks on the underside of the table and corresponding eyes on the compartment sides. •

Transistor Pocket Radio

[*Continued from page* 114]

friction rings that are merely pressed into place once the socket is pushed through the Bakelite. The diagram shows the socket connections for the base, collector and emitter of both transistors. When the sub-assembly is finished, mount it in its spot in the case and wire the interconnections between the sub-assembly parts and the other fixed components in accordance with the wiring diagram. Connection to the battery is made via special clips that fit over and into the battery terminals. These should be soldered to the battery leads with care. *Before connecting the battery, double-check to be sure that you are connecting it in the right polarity.* Transistors are easily damaged by reversing battery polarity.

Finally, trim the transistor leads to ⅝-inch and carefully insert the lead in the corresponding socket holes. Press down gently but firmly until you feel them slide into place. Your radio is now ready for RF alignment.

To adjust the set, connect a six-foot antenna hank to the antenna binding post and stretch it out, preferably near a telephone so that you may take advantage, in this initial adjustment, of the fact that there will be coupling between the telephone lines and your radio to strengthen the signal. Rotate the capacitor until it is almost fully counterclockwise. In this position, it should be tuned to the high-frequency end of the broadcast band (1600 kc). Rotate the knob slowly clockwise until you receive a station. Determine its frequency from the newspapers, then adjust the slug of the tuning coil until the station comes in at the right spot on the dial. Check this adjustment with other stations to make sure it is approximately correct. Cut a shallow scratch in the plastic top as an indicator if you wish to do so. Actually, tuning becomes very easy once you have become acquainted with the little radio.

If you live in a large city that plays host to powerful broadcast stations, you may have to shorten your antenna considerably. If the station received is too strong, distortion will appear in the reproduced

[*Continued on page* 155]

Pittsburgh perfects a sensational new Latex house paint!

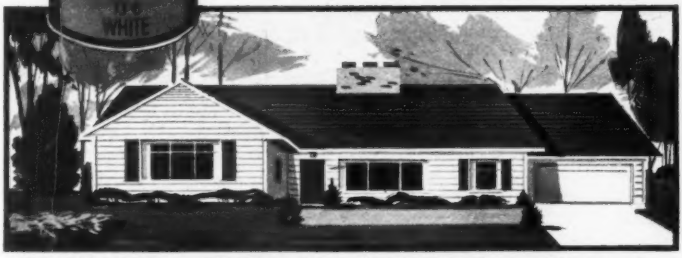
Easier to apply...even paints over damp surfaces... dries in 30 minutes...resists blistering...lasts longer

• **Leadership in research** pays off! After years of laboratory work and field tests in all parts of the country, Pittsburgh *perfects* an amazing new house paint —Pittsburgh Latex!

• **This new paint** is the greatest advance in paint development in years . . . gives you advantages in ease of application and durability never before thought possible!

• **New Pittsburgh Latex House Paint** is made from the same miracle resins that keep many of today's cars and appliances new-looking year after year! It can be used on wood, masonry, stucco, asbestos or metal surfaces.

• **Read below** about the remarkable results *you* can expect from new, *perfected* Pittsburgh Latex House Paint!

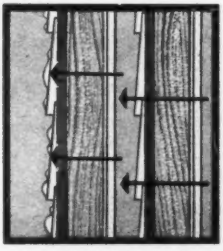


• **Sensational new Pittsburgh Latex House Paint** can keep your house looking "just-painted" years longer. The colors are fade-resistant ...white *stays* white, colors *retain* their crisp, clean beauty . . . and the new miracle resins are so durable they fight the effects of time and weather far longer! The result? A money-saving bonus of extra years between paint jobs!

• **You'll save hours** because Latex goes on so fast and smooth! No brush drag, no lap marks. Use brush, roller or spray.

• **Paint over damp surfaces!** With Latex you can paint over surfaces damp with dew or rain... or paint between showers.

• **Dries in 30 minutes!** Forget about rain, dust and insects messing up your paint job! Latex dries in only 30 minutes.



• **Resists blistering!** Correctly applied, Latex resists blistering. It lets trapped moisture *out*, yet will not let moisture *in!*

• **Clean up with water!** Cleanup and brush care is a snap! Just wash brushes, roller or spray gun in plain soapy water!

PITTSBURGH PAINTS

PAINTS • GLASS • CHEMICALS • BRUSHES • PLASTICS • FIBER GLASS

PITTSBURGH PLATE GLASS COMPANY

IN CANADA: CANADIAN PITTSBURGH INDUSTRIES LIMITED

• For America's finest oil-base house paint, ask for Sun-Proof—famous for highest quality for 100 years.

THOSE REMARKABLE EPOXY CEMENTS

You can permanently bond just about anything to anything with an epoxy resin. For strength and durability, it can't be beat.

GREAT STRENGTH of epoxy resin is demonstrated by young man who hangs from 1x2 bonded to a joist.

CATALYST from a separate tube must be added to epoxy resin to induce hardening.

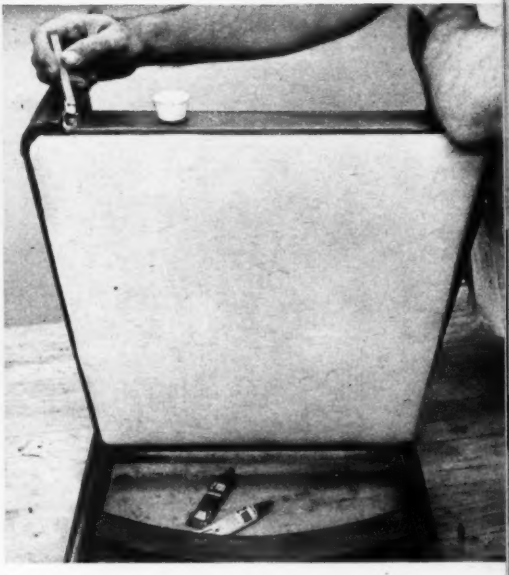
By Clarence Martin

EPOXY resin is one of the miracles of modern chemistry. With this waterproof cement, which hardens like a rock, there is hardly anything you can't repair permanently. The only exceptions are some plastics such as vinyl, polyethylene or polystrene. It will adhere to anything else you ever thought of cement-

MIXING must be thorough. Resin with a white pigment was selected to mend a cup.

CUP is held together with masking tape and the resin is allowed to set overnight.

RAZOR BLADE, curved to contour of cup, serves to shave resin flush with surface.



LOOSE chair rails are permanently mended by applying epoxy resin to the joints.

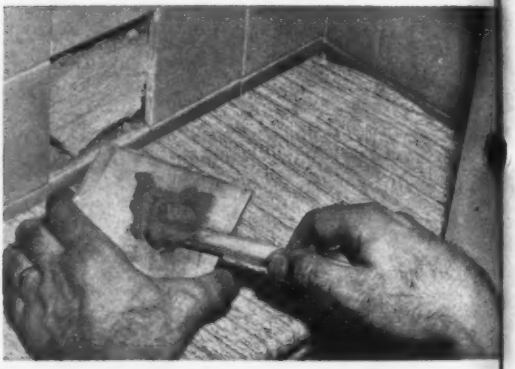
ing, even including the kitchen sink.

A partial list of the things epoxy resin has been used to bond will keep you going indefinitely: It tenaciously adheres to iron, steel, porcelain, wood, glass, aluminum, stone, concrete, paper, rubber, leather and most plastics. It will fill holes or cracks in floors, walls, ceilings, driveways, curbs, masonry, machinery, tanks, pipes, furniture, toys, gutters, downspouts or radiators. In fact, it is so useful in the salvage of materials that it is becoming more and more important in industry as well as the home.

Epoxy resin cement is supplied in two containers. One is the resin and the other is the catalyst, commonly called the hardener. The resin will not harden until the catalyst is thoroughly mixed with it. In some cases, resin and catalyst are mixed in unequal proportions but most manufacturers are now supplying the two so that they can be mixed half

and half for simplicity. After mixing, the hardening process generally takes about 24 hours, but excess resin can be trimmed off easier *before* it is completely hard when you have a special application such as the illustrated repair of a broken cup. If necessary, the hardening can be speeded considerably by the application of heat or delayed by a reduction of the amount of hardener used. With the same amount of hardener, you can work in the sun if you want the resin [*Continued on page* 171]

LIFTS (leather, rubber, plastic) can be replaced at home with a dab of the resin.



BATHROOM TILE will stay put when bonded to cement wall. White resin and black hardener are mixed equally on back of tile (left) until the color is an even gray (right). Then the tile is ready to set in place.

FURRING STRIP is secured to a concrete cellar wall without use of fastenings! Only requirement when using resin is that both surfaces be clean.

PLANK . . . *beautiful Trendwood® paneling for wash-and-wear walls anywhere!*

You can remodel a room in a weekend with this new fully-finished paneling that provides almost unlimited decorating possibilities. Six exclusive Trendwoods—Danish Birch, English Oak, Swedish Cherry, Italian Cherry, Swiss Walnut, American Walnut—are styled by American Color Trends for any interior, any decor. And Marlite with its baked melamine plastic finish needs no painting or further protection; resists scuffs, stains, dents. An occasional damp cloth wiping keeps Marlite new looking for years. Before you build or remodel, see your building materials dealer, or mail coupon below.

Each tongued-and-grooved plank (16" x 8' x ¼") goes up over furring strips or existing walls without muss or fuss.

Marlite®

plastic-finished paneling

Marlite Division of Masonite Corporation,
Dept. 938, Dover, Ohio
Please send full-color building and remodeling folder on new Marlite Random Plank.

Name_____

Address_____

City_____ State_____

6044

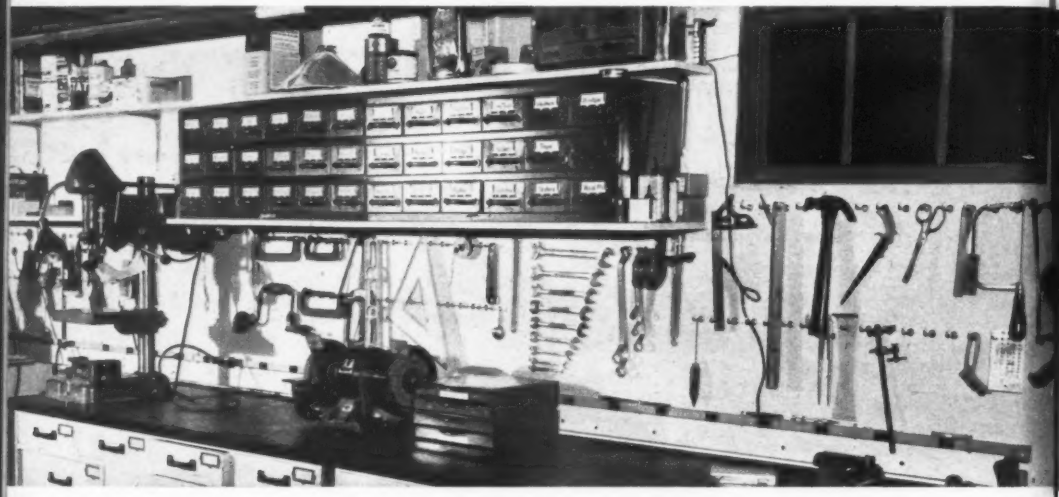
ANOTHER QUALITY PRODUCT OF MASONITE® RESEARCH

SHOP WALL

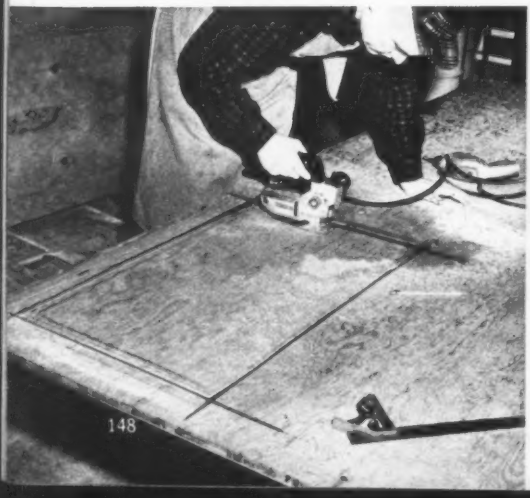
Two sheets of plywood, strap iron and shelving make up a wall for storing tools, tools and tools!

By Robert Brightman

THE easiest way to find a tool is when it's always in sight—hanging right in front of your nose above the workbench! Easier said than done, as most workshops are in a cellar with walls of concrete or cement block. The solution is a wall of wood in which you can oh-so-easily drive screws, mount hangers, put up shelves, etc. The wall—two sheets [*Continued on page* 154]



CUTTING OPENING for the window visible above. Allow one-inch clearance all around.

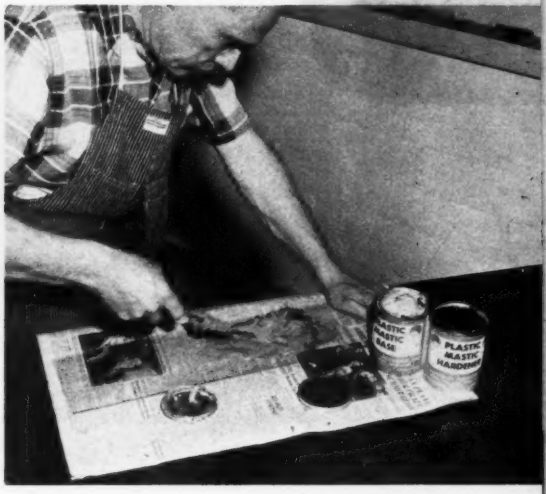


FRONT AND BACK of both boards are then given a coat of clear Firzite as sealer.

NO. 12 BX CABLE for connection to plug-in strip is shown being fastened to back.

WALL is temporarily set up on horses. The holes for straps are located as shown.

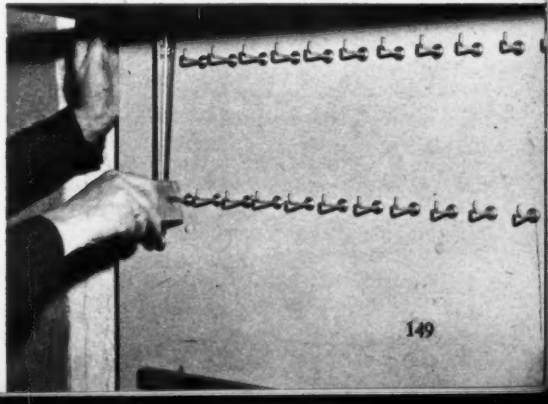
SECURING end strip. Straps are bolted to back of panel; short straps at window.

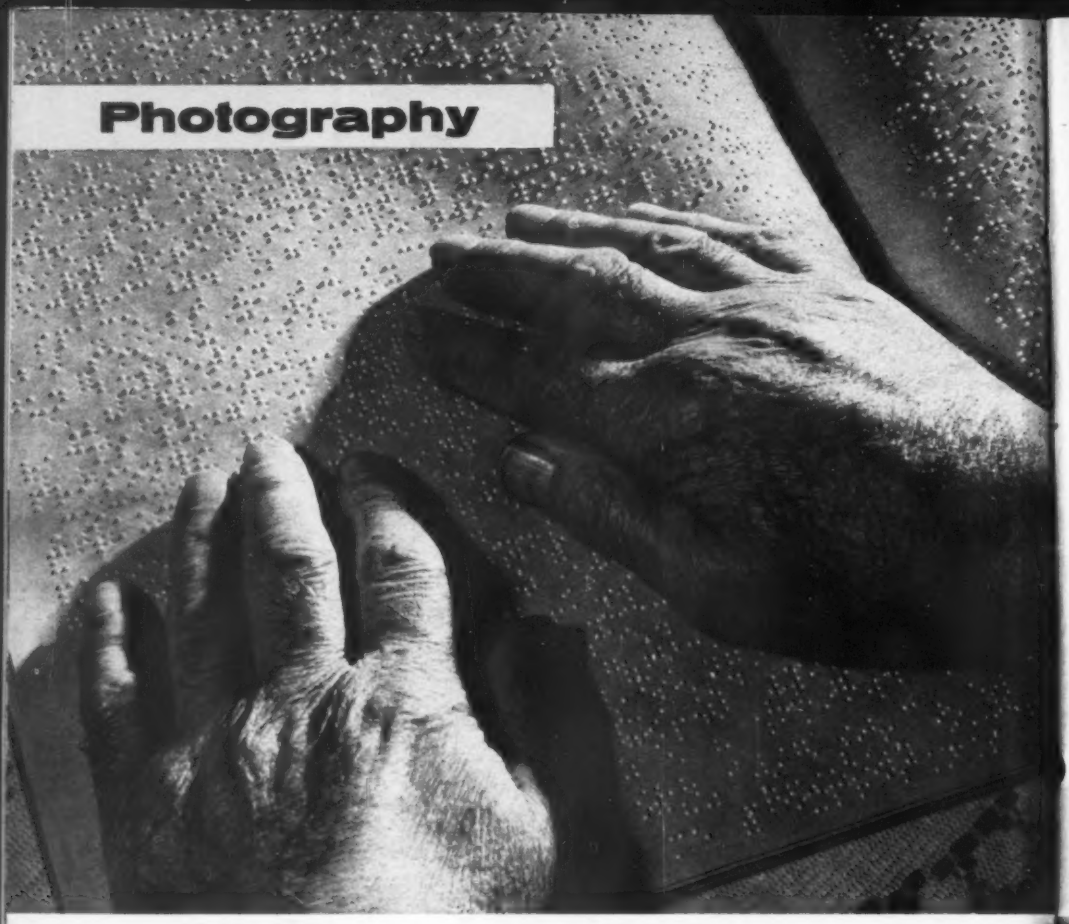


MIXING the epoxy cement. It is used to secure furring strips to the cellar wall.

FURRING STRIP, with epoxy cement, is positioned with cement facing cellar wall.

BLOCK OF WOOD with a slot down the middle is used to drive home the brass hooks.





LOW back light gives texture to hands and Braille: a fill light brings out detail.

Back Lighting

Produce striking photographs by breaking the old rule about keeping the sun at your back.

By Willard and Elma Waltner

AN old rule for amateur photographers states, "Stand with your back to the sun." But reverse this rule and you can come up with some really eye-stopping pictures. Give some thought to pictures which have impressed you recently. Why did they catch and hold your attention? Most often, the quality of the lighting was the reason; and, in many instances, back lighting made the picture.

Skillfully used, back lighting can dramatize any picture. It can outline or frame a scene, bring out the texture in a slice of bread or throw a halo of light around the blond curls of a child. It can

set the mood of a sunny day or give the illusion of moonlight on the water. It is a technique any photographer will find worth trying.

Since your camera can't stand light in its eye, you must protect the lens when you shoot into the sun or any other back light. This can be done by using a lens hood or by casting a shadow across the lens with a hat, a newspaper or your hand. Just be sure that whatever you use does not get into the picture.

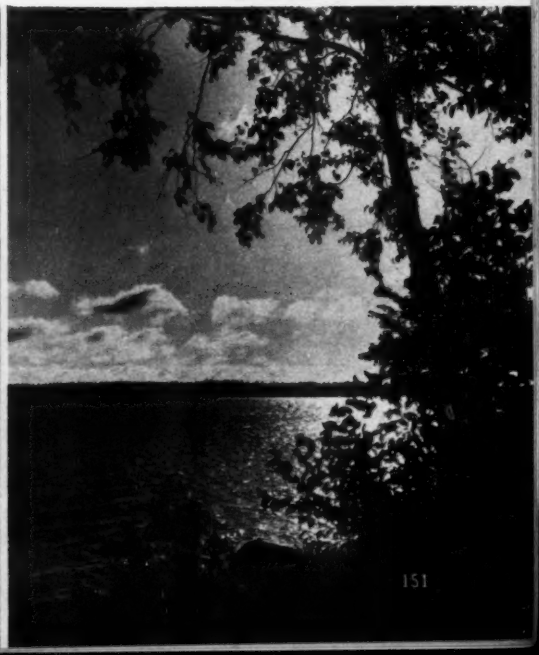
Indoors, floodlights are the usual source of back lighting. When using floodlights behind your subject, you can get an idea of how the picture will look by turning the lights on and off as you view the scene from the camera position. Or you can turn off the front lights entirely and look at the scene with only the back lights on.

In general, the back light is an auxiliary source of illumination and should be subordinated to the main light from the front. However, it is often used as the dominant light for certain effects such as the scenes shown. In order to determine if the lighting effect is harmonious, turn on all the lights and look at the scene with your eyes squinted or view it through the ground glass of the camera with the lens stopped down. If the back light is too dominant or too weak, it can be moved farther away or closer to correct the situation. However, when taking a meter reading for exposure, switch off the back light! It has no bearing on the reading and there is a chance that it will give a false high reading if the light strikes the photocell. The exposure should be based on the front lighting only.

Outdoors, the sun is the usual source of back lighting. When it is desirable to have full detail on the shadow side of foreground subjects, a fill-in flash is used on the camera and the exposure is based on the flash. For close-ups, care should be taken not to have the fill light so intense that it overpowers the back light and destroys the effect. If necessary, the flash intensity can be reduced by covering it with a ready-made diffuser or several thicknesses of white cloth. In scenics, where there is no dominant foreground figure, back lighting without a fill light will outline certain portions of the picture with very pleas-

FIRELIGHT dominates scene, so weak fill light was used for minimum shadow detail.

MOONLIGHT effect is created with a low sun and a tree to shield the camera lens.



LIGHT from behind outlines sheep in a landscape scene. Exposure was based on foreground and fill light was not used.

EMPHASIS of sand and wave texture is achieved with light from a low sun at left rear. Without a fill light, the figure is silhouetted.

ing results. In such a case, exposure is calculated for the shadow areas, allowing the back-lighted portions to look over-exposed in the final print.

There are endless possibilities to be explored in the use of back lighting. The sparkling texture of a snow or beach scene can be brought out with a low sun in the background; flowers and leaves take on a translucent appearance against the sky when a yellow filter is used to keep the sky from being entirely bald; a skimming back light on flat subjects will bring out low texture as in the case of the hands reading Braille; and the fireplace is an old favorite for an eye-catching shot. Try it—and discover the thrill of producing striking results. Use color or black-and-white film, but always remember that the exposure is based on the foreground light rather than the light behind. •

NEW DEWALT for only $199!

Economy 925-E Power Shop, quality-built as always

YOU SAVE $50

This 925-E DEWALT gives you features not found in other makes costing 25% more. It's cut-tested for accuracy, power-packed, versatile, safe. See it at your dealer's now. Send coupon for free catalog.

DEWALT, INC., Dept. MI-609, Lancaster, Pa.
Please send me free, 20-page catalog on DEWALT.

Name_____

Address_____

City_____ State_____

Shop Wall

[*Continued from page* 148]

of 4x8-ft. plywood, ¾-inch thick, butted end to end to make a "wall" surface 16 feet long and four feet wide. Big enough? You bet!

The first step is to waterproof the actual cellar wall with two coats of Silitex white cement waterproofing compound. Then the four surfaces of the two plywood sheets are sealed with clear Firzite. The front surfaces are given two coats of a light gray semi-gloss paint.

Arrange *your* shop wall to include at least one window. A window over the vise is ideal. Carefully transfer the actual dimensions of the window, plus one inch of clearance on each side, and cut out the window opening as shown.

Next, rip three strips of ¾-in. plywood, each four feet long. Two of these strips should be two inches wide and the third at least three inches in width. One two-inch strip is screwed to the far side of each panel. The three-inch strip joins the two panels at the middle. These strips also serve to keep the shop wall away from the actual cellar wall and so allows for air circulation.

You will need some strap iron, the soft malleable kind which is one-inch wide and ⅛-inch thick. Get 12 four-foot lengths for both boards. Each length of strap iron should be put in the vise and given a half twist six inches from one end. This stuff is quite soft and can be easily bent with pliers.

Drill five holes in each length of strap iron; the top two holes, which should be about four inches apart, are used to attach the strap iron to the joist by means of lag screws while the lower three holes, spaced about 18 inches apart, are used to secure the strap iron to the plywood with ¼x1-inch carriage bolts.

Mounting. The method of mounting the shop wall is rather unique. It is suspended from the ceiling joists by means of the strap iron and *glued* to the actual cellar wall! Set up each panel on horses or boxes against the cellar wall in the exact space it is to occupy. Make sure that the window is properly centered in its opening. Temporarily screw or clamp each length of strap iron to each joist above the plywood wall. Now mark the position of the three lower holes in each strap on the plywood as shown in the photo. It's important to use this method as not all beams are on 16-inch centers and secondly, some beams may be actually askew.

After the location of each length of strap iron has been determined, and the holes marked, remove the shop wall from the horses and bolt each length of strap iron to the back of each board as shown.

Note that a No. 12 BX cable was wired along one edge of the board to bring current to the plug-in strip which was later installed. After the cable and lengths of strap iron are in place, reposition the shop wall and permanently secure it in place by driving two lag screws through the two top holes and into the joist.

You will find that while this method adequately supports the shop wall, there will be a certain amount of play at the bottom. This can be taken care of by cutting a few lengths of two-inch wide furring strips, coating them generously with an epoxy cement called Plastic Mastic and then applying this furring strip to the actual cellar wall. Have an assistant pull out the plywood wall for you while you position the epoxy-coated furring strips. The epoxy cement should of course face the actual cellar wall.

When the cement has thoroughly hardened (allow two days for this), you can now screw the plywood to the furring strips cemented to the wall. This method of suspension does away with all drilling into the actual cellar wall. It was chosen because the wall was below grade and it was considered undesirable to break the waterproof seal on the inside of the house by drilling holes into the wall.

The next step was to wire 16 feet of National Electric's plug-in strip (if you are unfamiliar with electric wiring, get an electrician to do this for you). Next, brackets were installed to hold shelves. Two shelves were mounted along the entire length of the shelf wall, each a foot wide and 16 feet long, thus yielding 32 square feet of storage space. The next-to-last step was to install a series of 1½-inch brass shoulder hooks (they are made by

Shop Wall

Stanley, H. L. Judd, No. 412).

These hooks were installed in two parallel lines running the full width of the shop wall. They are 2½ inches apart. The bottom row of hooks is offset so that a tool hanging from a top hook could dangle between two hooks on the lower row. This hook arrangement is very convenient as you will find there are very few tools that cannot be hung up on one or more hooks and more hooks can always be added.

The last step? Oh, yes, that was the pleasant one of hanging up the tools on convenient hooks so they would be always visible and at hand. No more of this business: "Where the heck is that hammer?" •

Transistor Pocket Radio

[*Continued from page* 142]

sound. Should you be located where all the stations are weak, a good ground connected to the ground binding post will improve your reception immeasurably. Otherwise, a real ground connection is not required. •

PARTS LIST

PARTS SHOWN IN WIRING DIAGRAM

B	Battery, mercury type, 9 volts; Mallory TR-246R (Specify male and female push-on clips)
C1	Capacitor, 50 mmfd, small disk type; Lafayette C-601
C2	Capacitor, variable, 365 mmfd, single-section Poly-vari-con; Lafayette type MS-274
R1	Resistor, ½-watt, 1,000K ohms
R2	Resistor, ½-watt, 3.3K ohms
L	Tuning coil, adjustable slug type, for 365 mmfd capacitor; Lafayette type MS-299
D	Diode, germanium; Sylvania 1N34A
TR-1	Transistor, Sylvania type 2N34, p-n-p
TR-2	Transistor, Sylvania type 2N35, n-p-n
J	Open-circuit standard headphone jack
SW	Single-pole, single-throw slide switch; Lafayette SW-14

PARTS NOT SHOWN IN WIRING DIAGRAM

CASE	Plastic, 5¾"x3"x1-3/16"; Lafayette MS-164
POSTS	Binding, any type, small structure
BRACKET	For Poly-vari-con capacitor; Lafayette MS-310
BAKELITE	Small sheet such as Lafayette MS-304
EARPHONE	High impedance (3000 ohms or more) equipped with standard phone plug
SPACERS	Two ¼" thick to keep sub-assembly on Bakelite away from bottom of case
MISC.	Hardware, solder, wire, etc.

Can't Gouge Chrome Fittings . . .

The Jaws are SMOOTH

CHANNEL LOCK®

No. 415 Smoothjaw Plier

Now you can change faucet washers—easily, quickly—without gouging your chrome fittings . . . thanks to the CHANNELLOCK Smoothjaw Plier. The "toothless" jaws are adjustable for any size fitting to a full 2". The machined, undercut channels are smooth working . . . can't slip under any load. Equip yourself with this handy plier. You'll be glad you did next time you have a dripping faucet. If your tool supplier is out of them, ask him to order a genuine CHANNELLOCK Smoothjaw Plier for you.

Write for Catalog of Complete Line of Pliers

CHAMPION DEARMENT TOOL COMPANY

MEADVILLE 3, PENNSYLVANIA

[*Continued from page* 130]

calls for removing the wing nut, the cover, and finally the element which is then washed in cleaning solvent. After drying, dip the element in engine oil, then allow the surplus oil to drain off. This job should be done every 5,000 miles.

For the oil-bath type of cleaner, flush out the old oil along with any accumulated dirt, then wash the filter body with cleaning solvent and wipe it dry. Fill the filter body with a pint of SAE 50 oil in summer, or SAE 20 in cold weather, before reinstalling the element.

Some early production Chevrolet models had Polyurethane elements. These normally require inspection every 5,000 miles. They are cleaned by removing the element from the screen, washing it in solvent such as kerosene, then *squeezing* dry and dipping in 10W-30 motor oil. Never wring out or shake this type of element as it may become damaged.

Don't forget, if your new Chevy is equipped with a Positraction rear axle, only special GM lube should be used. The wrong lubricant here may cause chatter. There'll be a special tag under the rear axle filler plug if the differential is the nonslip type. Unlike many car companies, Chevrolet *does* recommend changing rear axle lube. The initial change should be made at 1,000 miles, then every 10,000 miles thereafter.

Never run the engine in gear with one rear wheel jacked up if the car is equipped with Positraction. If you try this with one of the Chevys with the new rear ends the unjacked wheel will immediately start turning and the car will move off the jack.

Something likely to be overlooked when checking the Chevrolet Turboglide transmission is lubrication of the control shaft between the transmission and the frame. This should be done every 1,000 miles using waterproof grease. Some changes have been incorporated into the Powerglide transmissions for the 1960 models. These include a vacuum modulator for Reverse, a damper valve in the pressure regulator valve and the use of reversible, clutch-driven plates.

These transmissions should not be drained and refilled unless being repaired or overhauled. Four service adjustments should be made on the Turboglides: (1) check the shift linkage; (2) check the throttle detent linkage; (3) see that the safety switch is working properly; and (4) check the dashpot control. This last mentioned unit is the valve that prevents the throttle from closing too fast when you lift your foot from the accelerator pedal on making a quick stop.

It is a mistake to check transmission fluid level until the transmission is warmed up. In normal temperatures this will take about five miles of driving. At this stage of the checking the engine idle speed should be about 450 rpm when the selector lever is at Drive. With the car on level ground, engine idling, parking brake set and the lever in Neutral, check the fluid level, adding more fluid if the level is down. Don't overfill!

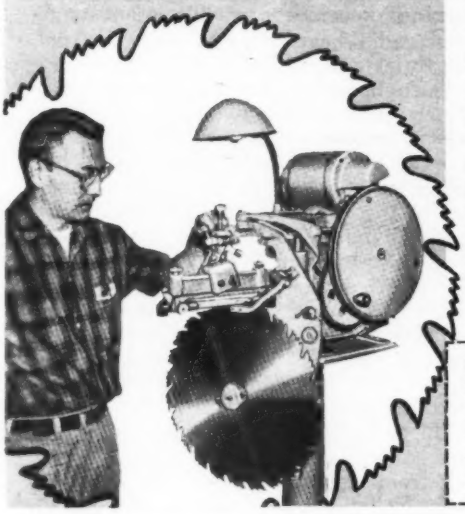
Chevrolet uses coil springs for rear as well as front suspension. Any odd noise in the rear *could* be due to a coil spring's upper end not being properly positioned in the spring seat. Due to added weight of the new bodies, specifications for allowable front and rear coil spring sag have been changed.

Chevrolet engines, too, have some special wrinkles. On the V8's there's a distributor cam lubricator which should be replaced every 25,000 miles. The break-in rule is well stated by the company's warning to avoid driving for extended periods at any one *constant* speed—whether fast or slow.

Starting rules are interesting. When cranking in temperatures above zero, depress the accelerator pedal to the floor and then release; this presets the automatic choke. However, if the temperature is below zero simply hold the pedal about halfway down. To correct for a flooded engine hold the pedal to the floor while cranking—and *don't* pump.

A final operational note concerns handling the car with the Positraction rear axle. If one rear wheel is on an extremely slippery surface, pull on the hand brake slightly to gain best traction. This is an old trick that also works sometimes with standard differentials. •

COMBINATION SAWS can now be *filed automatically*
with the New Model 200 **FOLEY** *Automatic* **SAW FILER**



This is the FIRST and ONLY machine which will file the so-called "combination" (rip and crosscut) circular saws; also crosscut circular saws, band saws, all types of hand saws.

The new model 200 Foley Saw Filer files the first tooth *in each segment* of a combination saw, clear around the saw; then the second tooth in each segment, and so on, until the saw is finished. The exclusive Foley principle of jointing the saw as it is filed, keeps all teeth uniform in size, shape and spacing; keeps circular saws perfectly round, usually doubles saw life.

Make from $3 to $6 an Hour

Now that you can automatically sharpen by machine the popular "combination" circular saws, as well as band, band, and crosscut circular saws—the opportunity to make money with the Foley Saw Filer is greatly increased. Start in your garage or basement in spare time—make from $3 to $6 an hour right from the start in a steady, repeat CASH business. No experience needed. Time payments if desired. Send coupon today—no salesman will call.

FOLEY MFG. CO. 915-O FOLEY BUILDING MINNEAPOLIS 18, MINN.

● Please send full information and Time Payment Plan on New Model 200 Foley Automatic Saw Filer.

NAME_____

ADDRESS_____

CITY_____ STATE_____

A Model Of The U-2

[*Continued from page* 121]

With the fuselage shaped, slit the two halves apart and proceed to hollow out each half within the dotted lines shown on the drawing. At the same time locate the position of the wing and slot each half of the fuselage for its installation. Then cement the fuselage halves securely together and allow ample time for drying.

The main wing is then pushed through the fuselage slot and cemented securely in position and allowed to dry before the turned-down wing tips are added. The tail surfaces are then cemented in place and a check is made to see that all surfaces are in proper alignment.

Now add the landing gear assembly, if you plan to use one. However, it will not be possible to use a landing gear assembly if you plan to high-start the model. In that case the high-start hook will occupy the place of the main wheel and strut assembly. If Jetex power is used, install the plywood engine mount on the fuselage.

The model is now ready for finishing. The first step is to fill all nicks and grooves with wood filler. When dry, sand all surfaces and then follow up with at least two coats of clear dope.

The primary color of the model is silver. Apply two or three coats, allowing ample time between each coat for drying. Pen and ink are used to make all surface markings and lettering. Use a little black dope to bring out the cabin and nose window silhouettes.

Built to be flown as a hand-launched glider the model can achieve flights of 40 to 50 seconds. Its high-aspect-wing ratio fiives it such excellent soaring qualities that if it is caught on a thermal updraft it may well fly away out of sight.

If you are using Jetex power, lightly cement the aluminum foil insulator behind the engine mount and fasten the engine mounting clip in place with small wood

[*Continued on page* 170]

McCahill Tests Caravan

[*Continued from page 84*]

is similar to getting a vibration treatment through a cement block. By contrast, the Commer is the finest-riding pot I've driven of this type. On a long drive I deliberately smashed it into deep potholes and over rugged rocky trails. I hit most of the rocks but the ride was fantastic—just about the same, comfort-wise, as any of our medium-price cars going over similar terrain. This job does fail somewhat in that it could use a little more horsepower on some steep grades. And the engine (which is mounted under the front seat) threw off some strong heat waves into the front cabin on the very hot days of our tests. Either better insulation will have to be installed before this bucket is named Queen of the Tropics, or the rig will have to be air-conditioned for real comfort in hot weather.

The visibility is strictly goldfish-bowl, meaning you see everything, including over the tops of normal-type cars. The traction is good and we ran it over some slippery mountain trails. Of course, Whiteman, McMichael and little me plus 95-pound Boji (who made our test trip with us) should have been enough to hold a Boeing 707 on the ground at full bore. The curb weight of the Commer is 2,550 pounds —300 more than the VW. The recommended top payload (which means your family, plus stuff) is 2,050 pounds, or just a hair over a ton. If your family weighs more than a ton, we recommend a Greyhound bus—but bear in mind, a ton of stuff, including you, is quite a lot.

The big feature of our camping trip (which was done strictly during daylight hours, then home to bed) was a display of Whiteman's culinary art. (If this gets out, he'll be mobbed at every sports car event he takes this balloon to—so keep it quiet.) As many people know, most truly talented persons have real skill in several fields. Whiteman, an old pal of the original Escoffier, is a chef who could put Betty Crocker and her best cookies into a trance. In less time than it takes to write about it, Paul whipped up an omelet such as the one with which he once dazzled the Prince of Wales (later the King of England, now the Duke of Windsor).

A great feature of the Commer is the ladder which Whiteman with his trusty binoculars can easily climb to observe races from the roof. In this capacity, the Commer becomes a mobile grandstand. Paul and I have plans to use that roof shortly as a dove-shooting perch.

The upholstery is fine British red leather of top quality, than which there is no better. Incidentally, when you want to retire in this four-wheeled hotel at a big sports car race or other clambake, there are beautifully-fitted curtains that draw across all the windows, and even one across the front cab, giving the interior occupants all the privacy of a room in the Waldorf Towers. Though the van didn't come equipped with screens, Paul is having some made as they will be especially handy in New Jersey and other spots where the mosquito is encouraged.

The available accessories include a butane gas heater which is vented to prevent you from waking up dead. Whiteman is counting on this to maintain the boyish glow on his nude dome during duck shooting expeditions. Another feature (in case of a flash depression or an invasion by the Canary Islanders) is that all the interior goodies can be removed in 15 minutes and the caravan then becomes a freight-carrying truck or a bus capable of carting 12 kids to school or strike-breakers to a riot. On a farm, one of these jobs could be used two ways—for vacation fun and for hard work the rest of the year. Whiteman didn't say it but in a pinch he could hustle a dozen musicians to a Jailhouse Ball with all their instruments (and the bull fiddle lashed on the roof).

How fast can you cruise this rig down the pike? Well, if top speed is your dish, at somewhere between 60-65 mph the Commer runs out of feet. A good cruising speed is about 50 mph. Zero to 60? That would depend on where the wind was blowing from. In a barouche such as this, don't worry about performance figures, as fast road speed is the last thing the designers had in mind when they built the car. This is not a Chrysler 300F or even a Sunbeam Alpine when it comes to out-

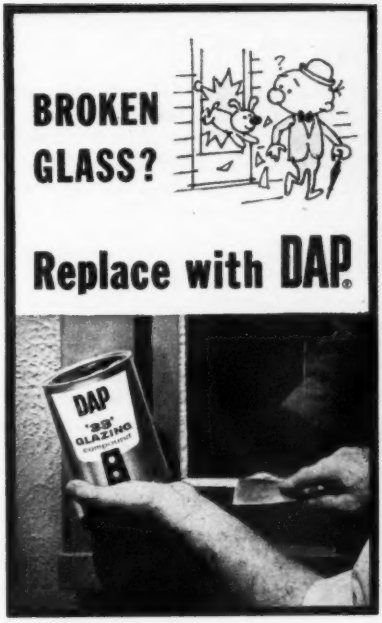
running a cop. All things considered, the performance is adequate though, as I stated before, a little more horsepower would be welcome.

Another option which will appeal to some is the fact that for a few more skins the Commer can be ordered with a Diesel engine. As you know, a lot of guys are mad about Diesels for several reasons, not the least being the fact that if you happen to have an oil burner in your house you can borrow a few buckets of fuel from the tank and run this thing for thousands of miles at a considerable reduction in cost. Of course, this is strictly illegal, as Uncle Sam wants all that road tax money (which about doubles your fuel bill). For that reason you would not do such a thing, I am certain—but I would.

Paul first started talking to me about getting a wagon like the Commer at least five years ago. We go to a lot of shoots together and Paul covers the east coast like a vacuum cleaner, going to sports car races. He has often said he was fed up with the ptomaine-fringed hot dogs and similar swill featured at such gatherings. Also, he gets a little fed up after an hour or so with the breast-beating officials who bend his ear constantly. This rig will be his escape when things get dull. He can cook himself a quick meal, then dive in the hay for a fast 40 winks and, after the race, leave for home refreshed. One of the reasons for Paul's being able to stay with the racket for as long as he has is that for years he has taken a short nap every afternoon. He found this essential in the old days when he criss-crossed the country with more frequency than a carrier pigeon. The Commer is his perfect answer for long extended outings.

In summing up, the Commer is a specialty vehicle which, in my opinion, has less chance of selling in big volume than Warren Harding has of staging a comeback. It has a great deal to offer including a truly magnificent ride for this type of vehicle. Unlike some of these rigs that look like junk, anyone can spot this as a class car a half-mile away. It sells in New York, fully equipped like Whiteman's, for $3,655, which seems expensive until you compare it with some of our nondescript so-called "station wagons" that sell for a lot more.

[*Continued on next page*]



DAP "33" Glazing Compound is your best way to set glass in wood or metal sash—or to replace dried-out putty that lets windows leak air and water. Works easily, lasts longer. Get DAP "33" and other nationally advertised DAP products at your hardware, paint or building supply dealers. Write for free do-it-yourself folder.

DAP
CAULKING COMPOUNDS
GLAZING COMPOUNDS
TUB AND TILE SEALER
SPACKLING COMPOUND

DAP inc., General Offices: Dayton 31, Ohio

Turner Torch

90th Anniversary Special!

The famous Turner Torch . . . for soldering, light brazing, thawing frozen pipes, burning weeds, removing paint, laying tile and hundreds of uses . . . now on sale with the green tank that contains 10% more fuel than any other disposable tank.

SAVE $1.90. Buy the regular Turner Torch now with two tanks for Only $7.89 complete

Available wherever hardware is sold or write

Turner Corporation

837 Park Avenue, Sycamore, Illinois

Then the price seems very reasonable.

By this time you may be wondering, "Whaddya do for a bathroom?" The only answer I have is that this is a problem man has faced since the cave days and the Commer won't help you one bit in solving. Aside from this one rather essential item, a small family could start out from New York, make a trip up the Alcan Highway to the Arctic Circle and return without dropping a single dime into a motel's bank account. This job may also catch the eye of many press and magazine photo-writing teams; you wouldn't have to be Frank Lloyd Wright to build a darkroom into it as the van has a sink and running water.

One small item I forgot to mention is that this caravan is a product of the Rootes Group of England and will be sold on these shores under the name Hillman-Commer Caravan. I believe the name "Commer" is a shortened-up version of "commercial." This hardly seems adequate reason for giving such a fine vehicle such a silly name. •

To Drive—And Live!

[*Continued from page* 88]

head-on traffic, are a lot duller than they were in the morning. I've been cut off by these tired drivers, charged at and often cursed at. Driving is my business and I always try to leave a little ducking area along the edge of the road in case one of these fatigued jokers suddenly flips his lid.

I want to keep you alive and if I can help one person take a *safe* approach to driving then this article is worthwhile. Remember, if you spend less time worrying about whether the other guy is "right" or "wrong" and spend more time worrying about how to avoid him, your chances of becoming a centenarian will be much better. Bear in mind that conditions vary from hour to hour during the day. A relaxed drive at 11 a.m. may have to be treated like a death watch over the same stretch of road at 11 at night. Far more people are killed at night than during the daylight hours. And the drunken-driving rate increases about 20 times after the sun goes down.

There is one other thing you might do well to keep in mind: Though it isn't possible to avoid all accidents, do everything in your power to avoid a head-on collision or a blow that hits you amidships. Try for a glancing blow if contact of some sort is inevitable. Keep a constant check on surrounding road conditions when things look as though they might get rough. A quick dive into a field saved me once and another time I cheated the guy with the horns and forked tail by driving right up a mud bank. If you anticipate trouble (and I always do) your chances of avoiding it are far better. Unconsciously, I find myself looking for escape alleys, even on turnpikes, because when trouble is right on you it's often too late to duck. Years ago we suggested that even on your drive to work each day you play little games with yourself such as "What would I do if that approaching car suddenly headed right for me?" or "What would I do if that trailer truck suddenly whipped into my lane, cutting me off?"

Pets are another problem. If a dog ran into your path, naturally you'd do everything you could to avoid hitting him. But how far should you go? There are times, due to oncoming traffic and impossible shoulder escapes, when the only possible out is to hit the dog. A lot of people have been killed trying to avoid hitting a dog on the highway. No one loves dogs more than I do—but if there is no possible alternative, I advise you to hit the dog rather than wind up on a morgue slab yourself.

Here are some added thoughts that might help your family avoid a mortician's bill this year:

Never drive faster than you or your car's ability to handle any possible emergency that might arise. If you are a new driver, take it easy until you know your car and know what you and the car can do under almost any circumstances. On long trips make an appraisal of your physical condition every hour or so. Few of us can realize when our reaction time has been cut in half through fatigue. If you're really tired, then pull off the road and get 40 winks—even if you're on your way to your own wedding. It's better to be an apologizing groom than to make the gal a pre-ceremony widow. When driving the pikes, continually size up the other drivers. If you find a truck or other car "tail-gating" you, do one of two things: Either speed up and get away from him, or pull over and force him to pass, because if an emergency arises that causes you to brake fast, that tail-

gater can quickly turn you into the filling for an iron sandwich.

Learn how to pass, whether on two-lane highways or turnpike roads. On two-lane highways try and make your pass as smooth as possible. If the road is clear ahead, it's often safe to take from three to 30 cars at one sweep. However, in this maneuver always be alert for some jerk whipping out in front of you without warning. If it's a long line of stumblebums, take a good look to see if they're tail-gating each other; if you're forced to duck back into line they may not give you room. Under this condition (strictly an emergency measure), get your right front fender ahead of the car you're passing and then start pulling over. The tail-gater will either give way by slowing down or scrape some of the paint off your car. In either event, it's better than a head-on collision. On turnpikes, beware of the fast-moving trailer truck that may suddenly whip out in front of you to pass a slower-moving line of other trucks.

Another fact not many people consider is: Are you comfortable on long trips? Unless you are thoroughly comfortable and the seat and legroom just right, you'll tire in half the time it takes for a man driving in perfect comfort.

When passing an old rattletrap with battered and snagged fenders, be particularly alert; the car didn't get those rips and dents in a snowball fight—and the joker behind the wheel may decide to whip into you at a moment's notice. Many a man or woman has gotten an Eternity Certificate by taking to the highways when they were emotionally upset. A family fight or even a "Dear John" letter shrinks good judgment to the size of a pea in a world of bowling balls.

One of the worst causes of disfigurement, though rarely death, is the parent who allows his three to seven-year-old kid to wander around loose in the front or back seat while traveling at a good head of steam. Many a neophyte presidential hopeful has had his skull fractured and many a future glamor girl has been gorilla-ized when mom had to slam on the brakes fast. Loose, untied kids in a car are in as much danger as if you tried to teach them how to swim in a poolful of crocodiles.

[*Continued on next page*]

screens, upholstery, carpets...
hundreds of other uses.
*You name 'em!**

Swingline 101 Staple Gun

Staples practically anything. Exclusive push-button loading and built-in staple extractor. At your stationery, department or hardware store.

only **4.95**

**Win $5 per Idea!*

Send for FREE 12-page booklet "Tips for Tacking."

Swingline pays $5 for each practical new idea on how to use the SWINGLINE STAPLE GUN...to be published in "Tips for Tacking." Send your ideas today!

tips FOR TACKING

Swingline INC.
38-00 Skillman Ave., Long Island City 1, New York

DO MORE PLANING JOBS WITH LOW COST BELSAW

LOW DOWN PAYMENT EASY TERMS

Exclusive MONEY-MAKING Features: Full 12¼" x 6" capacity • Power feeds at 14' to 34' a minute • Provides for Grinding Knives in the Cutterhead • Attachments for Jointing, Rabbeting, Tongue, Matching, Groove. Convert low cost rough lumber into high priced stock. Easy to make flooring and popular patterns. Send Today for FREE Literature and Prices.

Belsaw Machinery Co., 2041 Field Bldg., K.C. 11, Mo.

SQUEAKY

HINGES?

***QUICK!* Hush 'em up** with handy 3-IN-ONE OIL. Just a drop or two and away go squeaks. Dozens of other uses.

3-IN-ONE OIL

REGULAR • OIL SPRAY • ELECTRIC MOTOR

If you've never had a bad skid, think about it. It can happen any time and the only possible way to get out of it and back into control is to cut your front wheels in the direction the skid is taking you. If there isn't enough room for this, then say your prayers and head for the cellar. I've received five letters in the last ten years from readers who said I saved their lives by telling them about heading for the cellar. This simply means getting as much of you as possible on the floor and under the instrument panel. Then grab something solid and hang on. In many accidents this will save your life. You may break a bone or two but you have a good chance of surviving unless you're involved in a head-on smash that drives the engine back through the firewall. The instant the car comes to rest, if you have a free hand, switch off the ignition key and then get out as quickly as you can, as the car may burst into flames. Not a nice choice but it's saved hundreds of drivers. Every stock car race driver is an expert at hitting the cellar. Nine times out of ten they get the igntion switch off on the way down.

This is not a very happy little tale but all these are possibilities every one of us faces every time we pull into a stream of traffic—and don't ever forget it. Lotsa luck. •

$1,000 A Minute Surplus

[*Continued from page* 63]

relieve the newsprint shortage by making newsprint from wheat straw. We can make paper from surplus wheat and corn. If we simply add grain starch to wood pulp in paper production, this one use alone would consume 100,000,000 added bushels of corn yearly.

We could absorb the vast farm surplus; we could add new products from what we now consider waste. A few years ago, driving through South Dakota, one would see the horizon dotted by colorful piles of burning straw. Now we know this straw we once burned can be used to make much-needed newsprint and strawboard.

We can use wheat and corn starches as coating agents for textiles. We already produce a corn fiber called vicara for the manufacture of clothes. With intensification of our agricultural research, we would see buildings constructed of corncob concrete. We will wear clothes made of a luxurious corn fiber similar to cashmere. We may soon wear rainproof coats made from corn. Some are already made from lard.

We must recognize that one of the strongest contributing factors to the food surplus problem exists in the very nature of farming. Our 6,000,000 farmers have had little opportunity, due to the independent nature of farming, to apply the modern techniques of merchandising and research that have been the dynamic forces for growth in American industrial life.

If we but use the brains of some of our jet-age scientists in an Agricultural Manhattan Project that includes both creative and marketing research, we can bring to American homes a flood of new products that will stagger the imagination.

To spark this grain-chemical revolution, to organize this Agricultural Manhattan Project, we need to establish a separate agency of government with funds and authority to apply modern techniques of research, marketing and merchandising.

This new agency would have the authority to let contracts to industrial organizations with laboratories; it would have the authority to put scientists to work.

It would have the authority to seek out new ways to utilize the knowledge found in these laboratories; authority to develop markets, to help finance early production of new products from farm commodities. It would apply modern techniques to create a real consumer demand for these products. It would offer scholarships to young people to study farm-product science.

Some have suggested that the problem can be solved merely by shipping all our surplus food overseas to the needy peoples of other lands. We have shipped food overseas to many areas but to attempt to solve our gigantic surplus problem in this manner is to assume additional costs and burdens of transportation with little assurance the food will reach deserving peoples. We can ship the food to ports of under-developed nations but distribution facilities to the remote villages of the world are poor or lacking entirely. And we must also remember that to try to solve our surplus

food problem by foreign give-aways is to antagonize friendly allies who have surpluses of their own.

We must recognize that to find a realistic solution to these surpluses, and ultimate relief for the taxpayer, we must create additional farm product markets at home. These markets can only be created by the research program suggested here and by industrial application of our farm products.

Established on a crash basis, this new project would not only move the giant surpluses out of the warehouses onto the American markets, it would create new jobs. It would spur merchandising, advertising, transportation—all retail progress. It would spark a new, higher standard of living throughout the entire American economy. It would mean a fair price for a full crop for farmers.

And it would end, once and for all, the crushing burden on the American taxpayer: $1,000-a-minute for the storage of farm surplus that *should* and *must* be put to productive use for the benefit of all. •

Change Your Job?

[*Continued from page* 71]

highly competitive world and you'll never beat out the guys who love their jobs.

3. If you have actively disliked your job *for at least two years.* Give it that much time to make sure the loss of interest is not temporary.

4. If you begin getting a variety of mental and physical symptoms stemming from job hatred. These include: Continual trouble getting to work on time, more and more frequent headaches, stomach disturbances and other psychosomatic ills, irritability. (Check yourself out with a doctor, of course, to rule out organic illness.)

If you're ready for a change the next question is: How do you find the right job to change to?

Anne Heywood's method calls for five separate steps. Take a pencil and paper and follow along:

1. Think back to your teen years. What were your ambitions then? Recall the jobs you wanted and jot them down.

[*Continued on next page*]

put **SKILL** *in your hands*

Dremel MOTO-TOOL

In your workshop, on your job — it's the handiest tool you'll ever own! Moto-Tool is ideal for precision grinding, polishing, carving, drilling, engraving, deburring, sharpening — does fine detail work with pin-point accuracy. It eliminates time-consuming hand work, gives the finished job a professional look. Moto-Tool weighs only 13 oz. — fits your hand like it belongs there. Fastest, most powerful tool of its kind — develops 27,000 rpm! Widely used by tool and die makers, model builders, craftsmen, lab technicians, repairmen, gunsmiths, schools.

Moto-Tool Kit No. 2 with steel case **$27.50**

No. 2 Moto-Tool only **$19.95**

See your dealer or write for free catalog.

DREMEL MFG. CO., Dept. 140-J, Racine, Wis.

Quality Power Tools Since 1934 139

PELLET FIRING

LUGER AUTOMATIC

- Magazine Loading Clip
- Over 15 Moving Parts
- Fully Automatic

ONLY **$1.98**

Automatic full size model of a Luger Automatic pistol —contains over 15 moving parts. Loads 8 complete rounds which snap into the hard butt simulating a Luger. Fires 8 bullet shaped pellets. Has automatic slide action.

MOST AUTHENTIC MODEL GUN WE'VE EVER SEEN

Comes to you with working parts disassembled with cleverly engineered springs, full instructions, supply of pellets and specially designed belt holster. **Full Money Back Guarantee.** Simply send $1.98 plus 27c shipping charge or order C.O.D. From:

HONOR HOUSE PROD. CORP., Dept. LL-48, Lynbrook, N. Y.

Works in seconds!

Loosens Rusted Bolts

nuts, screws, "frozen" parts!

LIQUID WRENCH

SUPER-PENETRANT

The super-penetrating rust solvent that quickly loosens rust and corrosion.

AT ALL HARDWARE AND AUTO STORES

RADIATOR SPECIALTY COMPANY
CHARLOTTE, N. C.

2. Let your thoughts drift to the hobbies, pastimes and interests which have given you pleasure through the years. List the ones that have endured because of their sheer fun—anything from carpentry to a sneaking interest in women's dress designing.

3. Take the Help Wanted section of a large metropolitan newspaper and pretend you can have your choice of any job. Never mind if you don't have the qualifications —simply mark the ads you find fascinating. List them.

4. List all the things you *like* about your present job—it takes you traveling, working with tools, seeing people, using figures, etc.

Now put the pencil down and look back over your four lists. Do you see a pattern emerging? Do you see something common to all four lists?

For example, do you notice an emphasis on designing in each of the lists, or on work with tools, or in chemistry? The common denominator on all four lists is the area in which you ought to look for your next job.

But you're still not ready. Self-analysis is tricky and can lead you astray. You need professional guidance, so the next and final step is to take a series of vocational tests to rate your design dexterity, finger dexterity, your ability with numbers and tools. These tests probe into your insight, imagination, logic and judgment.

You can take these tests in a number of places. In many cities, they are given at the YMCA. Ask at your local Y for the facility closest to your city.

A large number of colleges and universities are geared to give them—ask at the registrar's office. You can also get them at many State Employment Service offices. Write to the American Personnel and Guidance Association, 1534 "O" Street, N.W., Washington 5, D.C., asking for facilities nearest your home.

Generally, the tests cost between $30 and $100 and take from two to three days. Caution: Beware of quacks. There are many in the field. If you stick to the Y, universities or state agencies you can't go wrong, but before going to a private organization, check their qualifications with your local Better Business Bureau or Chamber of Commerce.

Now, with the aid of professional help and your own evaluation, you're ready to sashay forth. Your first four lists and the results of your vocational tests will point the way.

Knowing the general area, you can get names of employers from a number of sources—the classified telephone directory, Chamber of Commerce, trade associations, trade magazines and professional societies. Friends and relatives may give you tips, ads may help, school and commercial placement offices can be of value. Watch for Civil Service announcements posted in public buildings.

Then, when you find the firm you would like to work for, find out the name of the hiring officer and write a neat, brief letter. It's a good idea to confer with a vocational guidance counselor on the organization of this vital letter which can mean everything.

Anne Heywood's files are bulging with case histories of men who changed jobs successfully.

For instance, Peter M., the St. Louis zipper salesman who hated his job. "This chap was a frustrated do-gooder," Miss Heywood explains. "He was serving on all sorts of committees, volunteering for all sorts of charity drives." Today, Pete is in charge of fund-raising for a major American university, earning $10,000 a year.

A New York lawyer was bored stiff by his work but he loved to give parties. His solution: He became public relations director of a trade association; now he spends the most of his time producing grand-scale parties for the trade.

Bert was a bartender in Chicago who became a salesman of costume jewelry. Today he earns literally three times the salary he took home as a bartender. A department store pots-and-pans buyer loathed his job—now he's sales manager of a large publishing house at double his income. John H. Lamneck was a school principal in Ohio when he enrolled for a correspondence course in law. Not long ago he was named to the Ohio Supreme Court.

You *can* change your job—and your whole outlook on life. But stewing, grousing, daydreaming, escaping into the world of fiction or TV melodrama and generally hiding your light under a bushel—even from yourself—will only keep you

in the rut you're in. Start taking the steps that will move you up and out of your Slough of Despond. There is experienced help at hand—go take it. There are people and jobs that need the man you really are. Quit hiding from them. •

Coming... Missile Bases

[*Continued from page* 67]

regardless of Arctic snow or desert heat.

The design in the illustration represents a combination of the latest ideas in Minuteman firing and support equipment, housed in what looks like a standard reefer boxcar. The roof mechanism, telescoping the functions of weather protection, launcher hoisting gin-poles and flashguard, is original with MI. So is the combination of an airtight traveling container and launching tube and the arrangement of the three-car firing unit.

MI's ten-car train is disguised as a nondescript local. It consists of a Diesel locomotive, a tank car carrying reserve fuel for increased range and a mail car used as a forward guard station. Following these come two day coaches, fitted inside as a comfortable sleeper and a diner/lounge, and a refrigerator car for food and supplies. The train's armament section includes two missile cars with a command/hoist car coupled between. A standard caboose winds up the procession and functions as a rear guard car. During action drills or actual firing, guards fan out from the train to provide a protective screen. They wear railroadmen's garb and carry sub-machine guns camouflaged as tool cases. If experience indicates the need, a second missile section can be added to the train, giving it a battery of four ICBMs.

The Minuteman missile, now approaching production, is a three-stage rocket with an atomic warhead. Approximately 57 feet from nose cone to nozzles, its largest diameter is six and one-half feet and it weighs in the neighborhood of 65,000 pounds. Its range has been estimated at 5,500 miles. The Minuteman will be loaded with a solid-fuel propellant which eliminates the intricate plumbing and lengthy countdown procedure of liquid-fuel rockets. It permits long storage in the

Send for your FREE
HEATHKIT 1960 CATALOG

HI-FI, HAM RADIO MARINE . . . TEST
Over 150 do-it-yourself electronic kits are illustrated and described in this complete Heathkit Catalog.

DO-IT-YOURSELF . . . IT'S FUN
IT'S EASY & YOU SAVE UP TO 1/2

HEATH COMPANY/Benton Harbor 7, Mich.
a subsidiary of DAYSTROM, INCORPORATED
Please send the FREE Heathkit Catalog.
NAME
ADDRESS
CITY ZONE STATE

MASS PRODUCTION MAKES THESE PRICES POSSIBLE
EASY TERMS
FREE COLOR CATALOG
18 FT. CRUISER KIT
WITH ONE-PIECE FIBERGLAS CABIN
ONLY $520

TAFT MARINE WOODCRAFT
Dept. MI-960 636 39th Ave. N.E., Minneapolis 21, Minn.

SPLIT SHUTTER?

FIX IT QUICK!
Weather-resistant Plastic Wood won't crack or crumble. Easy to sand, paint or varnish.

For surest results always use GENUINE
PLASTIC WOOD
Handles like putty—hardens into wood!

"ready" state and instantaneous firing. Ready for service in 1962, the railborne Minuteman and submarine Polaris team will give the United States a powerful voice in its constant crusade for peace. •

Blows Up Buildings

[*Continued from page* 99]

out in a hurry? Jack's your man—and he's able to set off his dynamite right in the factory without disturbing any nearby equipment. Got a harbor you want cleared? Burnbrae will send you a crew complete with a diver to cut off obstructions at any depth you specify.

That's the custom blaster: an outfit that's on call to any part of the country to handle any kind of work that can be done better with explosives.

An informed estimate has it that less than two dozen firms are engaged in custom dynamiting in the U. S., about six of them on the east coast. Of these, Burnbrae, Inc., is the only outfit known to drop major urban buildings in one shot.

The secret of the building demolition is that every one of the 200 or more charges is planted in the basement according to a carefully engineered diagram. These charges, of 40 per cent strength blasting gelatin in 1¼-inch diameter sticks, ½ lb. each, are primed with a series of millisecond-delay (MS) electric caps that fire specific groups of the charges in their proper order. Now a millisecond is a very brief time span. When Jack's charges go off, they sound like a single rolling explosion to the uninitiated observer but what really happens is worth a brief explanation.

As the twin buttons on the blasting machine are depressed, the instantaneous charges placed in the foot of the wall columns fire. This undercuts the building's walls on the inside, preparing them to hinge toward the center of the structure. A split second later, the MS-25 group shatters the columns in the middle of the basement. Twenty-five milliseconds after that, the MS-50s knock out another group of columns in a concentric circle around the already shattered center. Then the MS-75s chop off the columns in a rough circle around the MS-50 loading. The firings then fan outward in widening circles to the already undercut walls.

The center of the building begins to collapse straight downward before the last of the concentric groupings fires. By the time the last charges go off, the central mass is plunging into the basement, whipping the walls inward. The collapsing structure actually folds in upon itself. "Its own falling weight does the real work," Jack says. "The dynamite just starts it. In fact, we don't use much explosive. One man can carry all we need to knock down most buildings."

Jack's eight-story Washington buildings were the optimum size for dynamiting. In Pittsburgh, he was assigned a building of only four floors, and that worried him. "I wasn't sure that it had enough weight to fall the way we wanted it to," he says. But his active imagination solved the problem. The roof drains were blocked and the fire department pumped six inches of water atop the building at Jack's request. When the firing buttons were pushed, the heavily weighted building crunched down like a tired and soggy elephant. Not a brick fell more than 30 feet from the structure's limits.

Why use explosives to fell buildings when the wrecking ball has been standard for years? Dynamite demolition is an almost fantastic timesaver. On the three-building Washington job, Jack saved the prime contractor a good 45 days of his estimated schedule. It lopped $55,000 off the estimated demolition expense.

Still more dramatic is the elimination of personal risk. Says an insurance representative familiar with demolition coverage: "If that work had been done by conventional methods—jackhammers and headache ball—there would have been at least 20 men carted off to the aid station and possibly one killed."

Clearance is the big problem to the dynamiter. It is not practical to blast buildings immediately adjacent to or touching buildings to be saved. But given 50 feet or so between moderate sized structures, the dynamiter can begin planning.

Ask Jack a technical question about his work and you'll get a full answer. Some of his friends think this is a mistake, that giving out details helps competitors.

"Maybe," says Jack, unworried. "But every job is different. Then there's the matter of reputation. Nobody can get a good record just by reading about somebody else's work. And don't forget insurance coverage."

What slim, neatly-mustached Jack is most proud of is that all his insurance is with well-known American companies. "Now *that,*" he says, "is an accomplishment." When he first began operations almost a decade ago, only foreign insurers would handle him but years of accident-free work in a business crawling with dangers have permitted him to become one of the very few dynamiters with high American coverage. "We did it," Jack says, "by learning everything there was to learn about industrial explosives, then assuming that was only the beginning."

True enough. There is no complete textbook for the custom dynamiter. In fact, watch any unusual blasting operation and you'll see an explosives manufacturer's representative carefully taking notes to add new facts to his company's handbook.

When he blows the ten-second warning whistle and presses the switch that will start another big building into sudden oblivion, Jack Loizeaux is adding another chapter to the barely-begun textbook of the custom dynamiter. •

Learn To Use A Compass

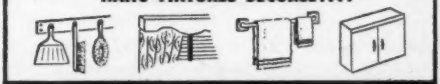
[*Continued from page* 92]

Once more rest the compass on a level object and sight a second landmark exactly southwest of you. Walk to this and stop. Look back again and familiarize yourself with the way the county looks in that direction, so you'll recognize it on your return. Continue this operation until you reach the far edge of the woods. Then you can be sure you traveled in a reasonably straight line from your "camp" to your destination.

To return, all you do is take the exact opposite compass reading which, in this case, is northeast and proceed from landmark to landmark as you did on the way in. You'll be amazed at how easy the first lesson is. There is one little complication

[*Continued on next page*]

HANG FIXTURES SECURELY...



USE **MOLLY** SCREW ANCHORS and JACK NUTS

JACK NUTS GRIP ANY MATERIAL, WORK IN NARROW SPACE

Jack Nuts need only ¾" expansion space . . . now you can fasten fixtures to flush doors! Grip any material up to ¾" . . . perfect for use in thin materials where wood or sheet metal screws won't hold!

BETTER THAN NAILS & SCREWS—Molly lets you put fixtures where you want . . . not just where studs are. Spider backing reinforces area in which used, won't pull through. BETTER THAN TOGGLE BOLTS—Easy to install, needs much smaller hole, fixtures can be removed and replaced in same anchor! Inexpensive, guaranteed. Ask your hardware dealer for genuine Molly . . . the name is stamped on the cap.

SEND $1.00 FOR SAMPLE BOX OF 12

EXPANDS BEHIND WALL **MOLLY®** Corp. 211 N. 5th St., Reading, Pa.

Enclosed is $1.00 for sample box of (check one) ☐ Mollys ☐ Jack Nuts

NAME

ADDRESS

CITY ZONE STATE

NEW WORKSHOP IDEAS!

Every issue of THE DELTAGRAM—popular bi-monthly home workshop magazine—brings you 28 colorful pages packed with ideas. Projects for extra fun and profit are fully illustrated, include plans, "how to" instructions, and bills of materials. Get 1 year subscription for $1.75 (or 3 years for only $4.00!) Send check or money order to: THE DELTAGRAM, Rockwell Manufacturing Co., 556J N. Lexington Ave., Pittsburgh 8, Pa.

Get New 132 Page Catalog of **WOOD** AND WOODWORKING MATERIALS

WORLD'S LARGEST SELECTION—Lowest Prices Your buying guide for finest kiln dried domestic and rare imported woods, inlays, bandings, matched plywood, moldings, ornamentals, etc. Largest selection of tools and hard-to-find hardware. Packed with scroll saw patterns, projects, wood facts and money making ideas. Enclose 25c (refunded on first order) to help pay mailing and handling costs. Write today to CRAFTSMAN WOOD SERVICE COMPANY 2729 S. Mary Street, Dept. G-9, Chicago 8, Ill.

ELECTRIC WELD - BRAZE & CUT

REPAIR MOST EVERYTHING MADE OF METAL

Home Appliances, Auto Parts, Farm-garden equipment, toys. Make and repair playground equipment, lawn chairs, tables, ornamental iron work, gates, wagons, etc. Solder, heat, bend, and straighten with terrific heat from arc torch. Cut and weld up to ¼" steel plate. A million uses for Home, auto, farm, inventors, factories, etc. Works from any home 110 volt plug-in. Complete with dark welders mask, arc torch, supply of carbon welding and brazing rods. Complete Welding Instruction Book. Portable—efficient—1 year guarantee.

SEND ONLY $9.95 (cash, ck, mo) and pay postman only $9.95 plus COD postage on arrival or send $12.95 and we will send postpaid. Ideal gift for mechanically minded home owners, relatives, friends. Order now for early delivery. Available only from:

MIDWAY WELDERS Dept. DMI-9 KEARNEY, NEBR.

that might arise. Should you reach a swamp, pond, stream, cliff or other impassable barrier, you'll have to detour. When doing this, keep an accurate count of the steps you take to the right (or left), then take the same number back on the other side of your obstacle. Once again sight in your compass and start traveling. Of course, if you can spot a landmark on the other side of the object before you detour, so much the better. Remember to keep an accurate notebook log of your journey into and out of the woods.

For your second lesson, try another woods near home, select a destination from camp that is deep in the woods, say to the south of camp. When you have reached this spot, try to come back along a different route than the one you traveled on the way in.

Here you'll need a pedometer, an instrument that measures the distance you walk according to the average length of your natural stride. Now, for example, say this area is one and one-half miles long and one mile wide. Travel according to your pedometer exactly one and one-fourth miles into the woods, say in a southerly direction. On the way, note in your log each landmark you sight, the distance by pedometer to it and the time it took you to reach it. Don't include time spent looking around or taking a compass reading, just note actual walking time. You can dispense with writing the time after you've become expert. But now it helps you get the real distance in both mileage and time —something every expert woodsman notes in his mind, if not in an actual written log.

When your pedometer tells you that you have covered one and one-fourth miles straight into the woods, stop. This is your destination. Now to return by a different route. Take a compass bearing to the west. Sight a landmark and walk to it. This is now at right angles to the line of travel you made into the woods from camp. Continue this westerly travel until you cover one-half mile. Stop. This is your second destination. An experienced woodsman could take his compass and walk right back to camp in a straight line. But that is a little beyond you at this point. So look for a landmark to the north, the exact opposite direction from the one you took into the woods. You'll travel in this direction, from landmark to landmark, until you have walked almost the length of time it took you to walk in to your first destination. Check now with your pedometer, then proceed until you've covered one and one-fourth miles.

Now turn toward camp, finding a landmark to the east. By walking one-half mile east you will come within sight of camp in about the same time it took you to walk from destination one to destination two.

When you have practiced these elementary steps for using a compass with half a dozen trial runs near home, you are ready to go camping and to trust yourself to venture into any strange woods a mile or so in total area. This is only the start of learning what you can do with a compass.

For instance, you can take a topographical map of strange and wild country, chart a course to some destination, then with compass and pedometer, hit your distant mark right on the nose. But for now, let's stick to using your compass and pedometer for fishing, hunting and camping and remember not to penetrate too deeply into the woods from car or camp—even with a compass until you become more expert. By using your compass, you can soon explore all the land within a mile or so of camp and so familiarize yourself with that area that you'll be in no danger of getting lost, even without the compass. However, never venture into the woods without it. You never know when a dense fog will shroud the woods and make everything look different.

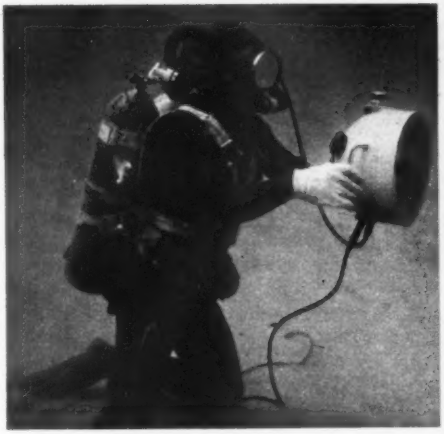
Use your compass on all camping, fishing and hunting trips. It may save your life.

Good luck! •

Computer System Aids Marines

U. S. Marine Corps units can be kept at full strength at all times with the aid of a nation-wide computer network just begun. In less than 24 hours, the new system will be able to give planners a detailed picture of the manpower needs of virtually every Marine unit in the world. Developed by National Cash Register Company, Dayton, Ohio, the system can tell electronically the exact number and type of Marines needed to bring each

NOW SEE THIS!



HAND-HELD SONAR for frogmen was developed by U. S. Navy Electronics Laboratory at San Diego, Calif. The basketball-size device can "hear" an object in murky water at 300 yards distance by means of a reflected signal. The distance of the object is determined by the pitch of the signal. The detector weighs 20 pounds on the surface, less than one pound under water. It is powered by 12 flashlight batteries plus transistors. The Navy is currently testing ten prototypes of the device.

CONTOUR LOUNGE is adaptable for home or for office use. When not in contour position it looks like a conventional couch. Hand switch allows user to raise and lower head or feet independently. This particular model sells for about $725. The Select-A-Rest unit can be used in place of box spring in any size bed. It plugs into your wall outlet, has a hydraulically-operated mechanism. Budget-priced version of the comfortable Select-A-Rest sells for $200.

THE ORIGINAL PACKAGED
BOAT KITS
MADE ONLY BY Custom Craft

● World's Largest Line—New Fiberglass Hulls. Over 200 styles Boats-Kits, Formed-Hulls, Semi & Custom finished. All types: Prams, Cruisers, Racers, Inboards, Outboards. Easy to build. Professional results. Dealers - Agents Inquire.
Send 15¢ for 3-Colored Catalogs 52 pg. Kit Catalog plus 20 pg. Hardware and 8 pg. Armor Glass books. *(SPECIAL OFFER!)* All 3-colored CATALOGS plus "Boating Handbook"... all for $1.
CREDIT TERMS

★ BOAT PLANS, PATTERNS FRAME PACS
● Over 400 Plans-Patterns, Frame Pak Kits. Prams, Kayaks, Racers, Runabouts, Catamarans, Cruisers-In-Outboards (6' to 40') Wood, Plywood and Steel. *Send 25¢ for 120 pg. Plan Catalog.* (Catalog plus "Boat Building Handbook"... Send $1.00.
CUSTOM • CRAFT Buffalo 7N, N. Y.

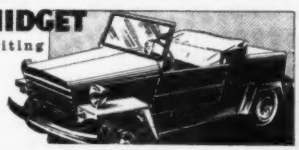
TINY RADIO PLAYS FOR 10 YEARS!

NO TUBES—TRANSISTORS—BATTERIES OR "PLUG-INS" NEEDED
Smaller than a pack of cigarettes. 1960 model never runs down or burns out. Guaranteed to receive local radio stations most anytime, anywhere—without EXTRA ANTENNA WIRES. Easy thumb station tuner—Perma wave detector. Chrome black plastic case. BUILT IN SPEAKERPHONE—NO SEPARATE DANGLING EARPHONE. American made and service guaranteed.
SEND ONLY $2.00 (Cash, ☐ mo) and pay postman $4.99 COD on arrival or send $6.99 for postpaid delivery. Sent complete—Ready to listen. No extras to buy. Free 1000 mile antenna enclosed if you order at once.
MIDWAY COMPANY Dept. TMI-9 KEARNEY, NEBR.

$7.95 DRAINS cellars, cisterns, wash tubs; IRRIGATES - CIRCULATES - SPRAYS

1,001 uses. Stainless shaft. Won't rust or clog! Use ⅛ HP motor or larger. . . . ¾ HP for up to 2,400 GPH; 450 GPH 30' high; or 1,800 GPH from 25' well. 1" inlet; ¾" outlet. **$7.95**
Coupling included. Free. ----------
Heavy Duty Ball-Bearing Pump. Up to 5,200 GPH 1¼" inlet; 1" outlet. --- **$12.95**
Postpaid if cash with order. Also other sizes, types. MONEY BACK GUARANTEE
LABAWCO PUMPS, Belle Mead 30, N. J.

***New* KING MIDGET**



World's Most Exciting Lowest Priced Car. Rider Agents Wanted. Send 25c for 32 page picture book, full details, dealer price. Or send $1 (refunded first order) for this plus Service and Repair Manual and 16 5x7 photos of car and factory.
MIDGET MOTORS CORPORATION, Athens 3, Ohio

"MINIATURE MACHINE SHOP
No Bigger Than A Typewriter, Outperforms Machines Many Times its Size!"

That's what Mechanix Illustrated says about UNIMAT in their 3 page feature story in the May issue. If you want a reprint of this story plus complete information about this amazing 10 in 1 combination precision tool write to:
AMERICAN EDELSTAAL, INC., UNIMAT DIV. Dept. JI. 350 B'way., N. Y. 13

GUNK® degreases

At better automotive supply and hardware retailers everywhere.
Cleans engines, garage floors, power mowers, greasy walls economically and safely.
In aerosol or poor spout cans.
GUNK CHICAGO CO., River Forest, Illinois serving the Midwest and Southwest
RADIATOR SPECIALTY CO., Charlotte, No. Carolina

MAKE 100% PROFIT!
Sell CUCKOO CLOCKS

NO STOCK TO BUY
INVESTMENT TO MAKE

$4.95 EA.

Direct from German Black Forest

Others sell Cuckoo Clocks for up to $25.00 each, and more, but we're the first to offer deluxe Cuckoo Clocks to Agents to be sold for only $4.95 each —without your buying stock—and enabling you to make 100% profit on each sold! Our Cuckoo Clocks are marvelous time-keepers—they come with weight and pendulum movement. Beautiful, HAND CARVED antique Walnut finish. Clock cuckoos cheerfully every 15 minutes. Fantastic New Plan now ready! All you do is take orders. You buy no stock and make no investment other than cost of first sample which you can buy now at special low sample price of $3.49 prepaid. When you become our active agent, you sell clocks for $4.95 and make 100% profit on each clock sold, because you pay us only $2.45 for each clock you sell—you keep $2.50! Tremendous potential. Send only $3.49 for clock and money-making details. Sorry no C.O.D.'s. Money-back guarantee.

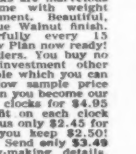
CUCKOOS EVERY 15 MINUTES

L & M CO.

Dept. CCA-8, 415 N. 8th St., St. Louis, Mo.

FREE 32-PAGE BOOKLET

. . . from your lumber, building material or hardware dealer . . . with complete instructions for building, patching or repairing with Sakrete ready-to-use Cement Mixes — your assurance of smooth working, high strength concrete or mortar.



INSIST ON GENUINE

SAKRETE

ADVERTISED AND SOLD NATIONALLY

300 POWER . . .

Complete Telescope Lens Kit only $3.98 postpaid

Conquer Space. Explore the Universe, Planets, Moon Craters, New Stars, etc. Complete Lens Kit consists of 80 inch focal length ground and polished objective lens, eyepiece lenses for 50 POWER, 100 POWER, 150 POWER, 200 POWER, 250 POWER, 300 POWER, and all necessary lens fittings. Easy to make from simple step by step instructions. (Tripod and mount not included.) Money back guarantee.

BUSSE SALES CO., Hartford, Conn., Dept. ML-83

MAKE YOUR OWN TELESCOPE

Mirror Making Kits .....$4.50 up
Aluminizing Mirrors ..6"—$3.50; 8"—$4.50
Quality Parts
Eyepieces • Cells • Prisms

FREE Catalog
Complete Instructions only 10c

PRECISION OPTICAL SUPPLY CO.
1001 E. 163rd St., N. Y. 59, N. Y.

ENJOY the WONDERS of the SKIES

SEE close-ups of fascinating stars, moons rockets, distant objects, sports scenes, etc. VIEW them in brilliant magnification with this powerful telescope. . . .

ASSEMBLED ready to use!

ALL-METAL QUALITY TELESCOPE

Precision-made. Ground, pol. lenses. 30x40 magnification (don't compare w/cheap cardboard scopes or kits). Enamel fin. Tripod incl. Satisfaction Guaranteed! Free Optical bargain list.

Amazing value.

Reg. 15.95. ONLY $9.95 ppd. Rush check or M.O.

PRACTICAL IMPORTS, Dept. M., P.O. Box 187, New York 71, N. Y.

75 POWER TELESCOPE 25X-45X-75X $3.98

NEW 3 in one telescopes. 3 variable 25X-45X-75X magnification. Brass bound, 25 power for ultra bright images 45 & 75 power for long range. Guaranteed to bring distant stars, moons, objects, sports 75 times closer.

Most powerful scope sold anywhere near this amazing-low price. American made, 5 sections. Opens 36", closes 1 ft.; contains 4 ground & polished lenses. Can also be used as powerful compound microscope. Mass production enables us to offer telescope complete at $3.98 postpaid. Money back guarantee.

CRITERION CO., Dept. BML-88, 331 Church St., Hartford, Conn.

A Model Of The U-2

[*Continued from page* 157]

screws. For Jetex flying, simply load your engine with one or two solid fuel pellets, place into the mounting clip, aim, ignite and—*zoom*—she's off.

However, if you are going to high-start it, tie an 18-inch loop of flat brown rubber between ten feet of nylon cord tied to two small stakes driven into the ground about 30 feet apart. The hook under the model's fuselage is then dropped over the rubber and the model pulled back (like an arrow in a bow), and then released.

Whichever launching method is used, first test glide your model to be certain it is properly balanced. If it's not, add ballast where required.

To induce a slight bank in the glide pattern, bend the rudder slightly. With the glide pattern established you should have little trouble obtaining some really spectacular flights. •

Golden Hammer Awards

[*Continued from page* 123]

Arnold, Morristown, Tenn. . . Paul J. Sandoe, Ephrata, Pa. . . Donald Schneider, Mt. Morris, Mich. . . Jerry Coro, Providence, R. I. . . Rudolph Hutto, Swansea, S. C. . . Roy W. Benner, K. C., Mo. . . Billy Pacheco, Albuquerque, N. M. . . Vernon L. Collamore, Scott City, Kan. . . Peter A. Fehr, Merrill, Wis. . . Albert T. Meyers, Mansfield, Mass. . . Albert K. Hunze, Cape Girardeau, Mo. . . James Bryant, D.D.S., Minneapolis, Minn. . . Frank J. Read, Ottawa, Ont., Can. . . Joseph L. Melvin, Charleroi, Pa. . . Charles L. Blackman, Harrisburg, Ill. . . Bud Wright, Columbus, O. . . Richard Hudson, Baltimore, Md. . . Otis F. Batten, Martinsburg, W. Va. . . John Kleppinger, Hagerstown, Md. . . Russell F. Savage, Manhattan, Kan. . . Charles A. MacCormack, Kittery, Me. . . Wilburn L. Hinsen, Butte, Mont. . . Stanley Hoffman, Vandergrift, Pa. . . Robert E. Distler, Portland, Ore. . . Walter C. Bell, Kansas City, Mo. . . John F. Rose, Conneaut, O. . . Charles W. Gatschet, Sherman Oaks, Calif. . . Gennaro V. Cacciapauti, Brooklyn, N. Y.

The following craftsmen have been awarded CERTIFICATES OF MERIT for their projects:

Donald Bloomingdale, Lockport, N. Y. . . Jack M. Pollard, West Palm Beach, Fla. . . Al. G. Haeberle, St. Peters, Mo. . . Truman C. Steele, Johnston City, Ill. . . Lillian Gitter, Hortonville, Wisc. . . Dan O. Stanfield, Las Cruces, N. M. . . Arthur E. Ader, Rolfe, Iowa. . . Jerry Persechino, Tarrington, Conn. . . Julius Benis, Cleveland, O. . . R. B. Gandy, Saint John, N. B., Can. . . Harold K. Hamilton, Toledo, O. . . Harry Turuille, San Diego, Calif. . . Ralph Hodge, Newport, Ky. . . K. E. Gruver, Hutchinson, Kan. . . Gene Wisniewski, Toledo, O. . .

Look for names of more winners next month.

Epoxy Cements

[*Continued from page* 146]

to set up fast or in the shade if you need more time.

During the hardening, the resin will not shrink or expand—another definite advantage. When hard, it is a waterproof, oil-proof, non-flammable, non-conductor which is also resistant to fungus, acids, alkalies and other chemicals. Not only that, it can be painted, sanded, filed, drilled or machined.

Some epoxy resins are sold with a filler material added to thicken the mix. This adds strength and bulk, making it useful for filling large holes or dents, such as in the rebuilding or repair of an automobile body.

For household use, the resin and hardener are sold in small tubes. You can also buy it in cans of increasing size or in bulk quantities. Then there are kits consisting of resin, catalyst, Fiberglas cloth, mixing cups and brushes; these are useful for patching holes in such things as car bodies, boats, tanks or anything that is rusted out. With larger quantities of glass cloth and resin, you can completely cover boat hulls, metal tanks or even roofs.

The only precaution to take in using epoxy resin is to work in a well-ventilated room and avoid getting it into your eyes. If it comes in contact with the skin, it can be washed off with a detergent or soap and water before it hardens!

With this modern product, repair jobs are now possible that previously defied any known method. You can get the resin clear, white or dark and color pigments can be added to the clear if necessary. So think before you discard anything; it probably can be repaired. •

LIST OF MANUFACTURERS

Williams Adhesives, 8220 Kimball Ave., Skokie, Ill.
Devcon Corp., Danvers, Mass.
Klenk Plastic & Chemical Co., Inc., United Artists Building, Detroit 26, Mich.
Chem Seal Corporation of America, 12910 Panama St., L. A. 66, Calif.
Pierre E. Ouellette, 6891 Alberni St., Westview, British Columbia, Canada
Woodhill Chemical Co., 1390 E. 34th St., Cleveland.
Beetle Plastics, Fall River, Mass.
Immerman and Sons, 1924 Euclid Ave., Cleveland.
R. H. Fisher & Co., 117 W. 21st St., Norfolk 17, Va.
Plastic Associates, 2900 S. Coast Blvd., Laguna Beach, Calif.

UNUSUAL BARGAINS

See the Stars, Moon, Planets Close Up!
3" ASTRONOMICAL REFLECTING TELESCOPE
60 to 180 Power—Famous Mt. Palomar Type! An Unusual Buy!

Assembled—Ready to use! You'll see the Rings of Saturn, the fascinating planet Mars, huge craters on the Moon, Star Clusters, Moons of Jupiter in detail. Galaxies! Equatorial mount with lock on both axes. Aluminized and overcoated 3" diameter high-speed f/10 mirror. Telescope comes equipped with a 60X eyepiece and a mounted Barlow Lens, giving you 60 to 180 power. Low-cost accessory eyepiece available for higher powers. An Optical Finder Telescope, always so essential is also included. Sturdy, hardwood, portable tripod. FREE with Scope:—Valuable **STAR CHART** plus 272 page **"HANDBOOK OF HEAVENS"** plus **"HOW TO USE YOUR TELESCOPE"** BOOK.
Stock No. 85,050-B ..... $29.95 postpaid

KNOW THE TRUTH ABOUT POWER. Telescope experts will confirm that an Astronomical Telescope will only give you practical powers to about 50 or 60 times per inch of objective diameter—powers above this only produce empty magnification—make viewing dim, difficult and unsatisfactory.

War Surplus American-Made 7x50 Binoculars

Big savings! Brand new! Crystal clear viewing—7 power. Every optical element is coated. An excellent night glass—the size recommended for satellite viewing. Individual eye focus. Exit pupil 7mm. Approx. field at 1,000 yds. is 376 ft. Carrying case included. American 7 x 50's normally cost $195. Our war surplus price saves you real money.
Stock No. 1533-B ..... only $55.00 pstpd. (Tax included)

Terrific Buy! American Made!
OPAQUE PROJECTOR

Projects illustrations up to 3" x 3½" and enlarges them. No film or negatives needed. Projects charts, diagrams, pictures, photos, lettering in full color or black-and-white. Operates on 115 volt, A.C. current. 6-ft. extension cord and plug included, operates on 60 watt bulb, not included. Size 12" x 8" x 4½" wide. Weight 1 lb., 2 oz. Plastic case with built-in handle.
Stock No. 70,199-B ..... $7.95 Postpaid

SPECIAL! SPECIAL!

Complete Optical Kit! Build a 6" Reflecting Telescope! (Described in Mech. Illus. February & March 1958 issues) Consists of plate glass mirror blank, tool; 2 finely ground and polished lenses to make ½" F.L. eyepiece; first surface diagonal mirror; magnifying lens; 8 abrasives; pitch.
Stock No. 70,154-B ..... $9.00 Postpaid
Stock No. 70,004-B ..... Deluxe Kit with Pyrex mirror blank—1" eyepiece lenses ..... $11.95 Postpaid

WOODEN SOLIDS PUZZLES
12 DIFFERENT PUZZLES THAT WILL STIMULATE YOUR ABILITY TO THINK AND REASON

Here is a fascinating assortment of wood puzzles that will provide hours of pleasure. Twelve different puzzles, animals and geometric forms, to take apart and reassemble, give a chance for all the family, young or old, to test skill, patience, and, best of all to stimulate ability to think and reason while having lots of fun. Order yours now.
Stock No. 70,205-B ..... $3.00 Postpaid

THE ABACUS—Fascinating Arithmetic Tool
See June 1960 MECHANIX ILLUSTRATED Article "HOW TO USE THE ABACUS"

Here's an important educational tool for individuals or classroom. Aid to learning and teaching addition and subtraction. 10-bead, 6 rows—9¾" wide, 7¾" long—made of beautiful walnut—lock jointed for sturdiness. Complete instructions included.
Stock No. 70,201-B ..... $4.95 postpaid
BUILD YOUR OWN ABACUS (Same as above) Package of 60 beads only plus directions.
Stock No. 60,098-B ..... $1.30 Postpaid
JAPANESE SOROBAN ABACUS 21 rows—instructions included.
Stock No. 50,293-B ..... $1.50 Postpaid

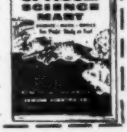
ORDER BY STOCK No.—SEND CHECK or M.O.—Money-Back Guarantee
EASY PAYMENT PLAN AVAILABLE! DETAILS WITH CATALOG!
EDMUND SCIENTIFIC CO. BARRINGTON, NEW JERSEY

MAIL COUPON for FREE CATALOG "B"

128 Pages! Over 1000 Bargains!

EDMUND SCIENTIFIC CO., Barrington, N. J.
Please rush Free Giant Catalog-B.

Name .....
Address .....
City ..... Zone..... State.....



Take it from

Frank Gifford

sportsman and star pro halfback

"Waterproof boots of SYL-MER (formerly Sylflex) treated leather really keep your feet dry!

"I've learned a leather boot can't be waterproof without two things:

1. SYL-MER* treatment for water repellency plus free-breathing comfort, and

2. Water-tight construction with all seams sealed against leakage."

To be sure your feet stay dry while hunting or on the job, insist on boots with the SYL-MER tag. It's your assurance that the manufacturer has taken special care to make the boot truly waterproof. It also means the leather will stay soft and flexible, even after repeated wettings.

DOW CORNING CORPORATION, MIDLAND, MICHIGAN.

*T. M. Dow Corning Corp.

RANGER HEAVY DUTY EMGEE

for everyone who finds the weather wet and the going tough. Tan SYL-MER treated leather uppers, vulcanized to heavy corker soles and heels. Permacounter heel supports, won't break down. Leather laces. Complete range of sizes and widths.

1188—9" style, $18.75

918—6" style, $16.50

For name of nearest retailer, write Endicott Johnson, Endicott 1, N.Y.